TUFTS UNIVERSITY LIBRARIES
3 9090 013 409 137

Webster Family Library of Veterinary Medicine
Cummings School of Veterinary Medicine at
Tufts University
200 Westboro Road
North Grafton, MA 01536

ANNULLING ALL PREVIOUS LISTS.

EDWARD E. BRADLEY, President. ERASTUS A. DOOLITTLE, Secretary.

# PRICE LIST

No. 44.

# New Haven Wheel Co.

MANUFACTURERS OF

## VEHICLE WHEELS.

*Usual Styles, English Sharp Edge,*

*Sarven Patent, Warner Patent,*

*Patent Banded Hub*

*and Fire Department Wheels,*

— ALSO —

*American Axle and Wheel Co's Patent Axle and Wheel.*

NEW HAVEN, CONN., U. S. A.

1889.

SECOND GROWTH

# EASTERN TIMBER

*A Specialty in our Manufactures.*

DEALERS IN

## Miller's Patent, Steele's Patent, Half Patent and other Axles.

*WHEELS OF ALL SIZES TIRED*

—AND—

Axle Boxes accurately set in Hubs whenever desired.

---

## CONTENTS.


| | Page. |
|---|---|
| Usual Styles Wheels, | 7 |
| Sulky Wheels, | 7 |
| Sarven Patent Wheels, | 9 |
| Warner Patent Wheels, | 11 |
| Kenney Patent Banded Hub Wheels, | 12 |
| Patent Back Bands for Hubs, | 13 |
| Spokes, Rims and Hubs, | 14 |
| Ironing (Tiring, Boxing, etc.), | 15 |
| American Axle and Wheel Co.'s Patent Axle and Wheel, | 16–19 |
| Axles (Half Patent), | 20 |
| Axles (Miller's Patent), | 21 |
| Axles, Half Patent Collinge Collar, | 22 |
| Axles (Steele's Patent), | 23 |


TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

ESTABLISHED 1845.

# New Haven Wheel Company.

*TO OUR PATRONS:*

We take pleasure in presenting the trade with our 1889 Price List herewith and trust it will be found entirely satisfactory.

No changes to speak of have been made in the prices of goods heretofore quoted. A few more sizes of wheels have been added this year, also a new axle and wheel which are mentioned more particularly below. We never felt better prepared to serve our customers in every department of our business than at present.

It will be our constant and utmost endeavor in the future, as in the past, to give our customers perfect satisfaction; and the added improvements which the experience of nearly forty-five years in the business has suggested, give us faith to believe that our success in so doing is beyond experiment.

We have now on hand a very large stock of *seasoned second growth Hickory and White Oak*, and with the best modern machinery and long experience in the business feel that we are enabled to furnish the *best wheels made for the prices charged.* We challenge a comparison, at equal cost, with any and all other makes of wheels, for *style*, *durability* and *strength.*

We desire to call particular attention to our light wheels. They are all made of pure second growth Hickory spokes and rims and Elm hubs, carefully seasoned and put together, nicely finished and the prices for them will be found very reasonable.

It seems hardly necessary for us to especially notice our unpatented styles of Wheels, which include English, and Common styles, they being so thoroughly well known already. A steadily increasing trade from 1845 down to the present time attests the care we take with them, and their consequent value. It is our intention, and will be our constant endeavor in the future, to *excel* in these lines of work. We make but two qualities ("Extra" and "No. 1") of Wheels having Sharp Edged (English Style) Spokes. Of the usual styles Wood Hub Wheels, we make *four* qualities, viz: Extra, No. 1, No. 2, and No. 3.

We have very desirable Spoke Patterns, etc., for light wheels for road wagons and other light driving vehicles. We ask a special trial for these, believing them to be the most stylish and durable wheels of the kind made.

We make four grades of the light sizes of the genuine "Sarven" Wheel, designated A, B, C and D respectively.

We shall continue to pay special attention to the *first class* (A) Sarven Wheel, which has been adjudged by the public, after more than thirty years' use, the BEST PATENT WHEEL MADE. The lower grades are made in order to supply the constant demand for good durable wheels at moderate prices. As such we confidently recommend them.

We also make four qualities of the Warner Patent Wheel, designated XXXX, XXX, XX and X respectively. This wheel has now been before the trade for some twenty years, and has been accepted and approved on its merits. It is a favorite wheel, very reliable, and its use is quite widely extended.

Of the Kenney Patent Banded Hub Wheels we also make four qualities of the light sizes, designated XXXX, XXX, XX and X respectively. This excellent wheel has been thoroughly tried, is very popular and continues to grow in public favor.

During the past four years we have manufactured the wheels sold by the American Axle and Wheel Company of New York, and through this experience have carefully observed the growth and character of their trade. The great merit both in their axle and wheel, as well as their superior lubricating device, have led us to arrange with that company to offer their goods to our trade, which we do in this issue. They make but one grade of these goods, and that strictly the best.

For the purpose of meeting a demand both at home and abroad, and especially in those places where properly skilled labor, pertaining to this branch of business, is not readily attainable, we some years ago added to our wheel business the tiring, boxing and banding of wheels; also the furnishing of axles. Our customers are thereby enabled to procure their wheels simply finished in the wood, or to procure them tired, or tired, banded and boxed, and with any usual style or make of axles they desire. This department is greatly appreciated by many of our customers, who use it frequently and find it of great convenience and advantage.

We ask a fair trial for all our work. Thanking our many friends and customers for generous favors in the past and trusting to receive and merit such in the future, we remain, with great respect,

NEW HAVEN WHEEL CO.

NEW HAVEN, CONN., U. S. A.
JANUARY 1ST, 1889.

N. B.—The price of Screwing or Riveting rims of all styles of wheels is given on page 7, and is governed always by the *width of tread.*

Be particular to give all dimensions possible when ordering wheels, as all omissions will be supplied by us, and customers must take the risk of their being right.

No wheels warranted unless length of tenon is greater than width of spoke at shoulder after hubs are cut out for axle boxes.

Printed blanks or blank books for ordering wheels furnished on application.

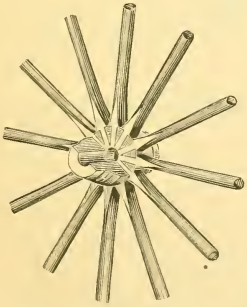
## MAXIMUM SIZES.

If height of wheels (all styles) exceeds 4 feet front and 4 feet 8 inches back, on sets, or 4 feet 4 inches on pairs, they will be subject to an additional charge of 50 cents per inch per wheel for all such excess.

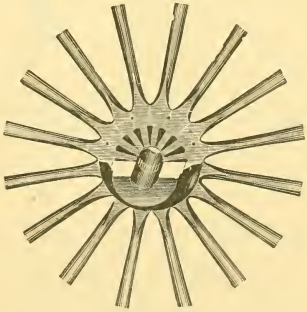
If width of tread exceeds width of spokes at hub an extra charge may be made.

If *Depth of Rims* exceeds the following an extra charge may be made.

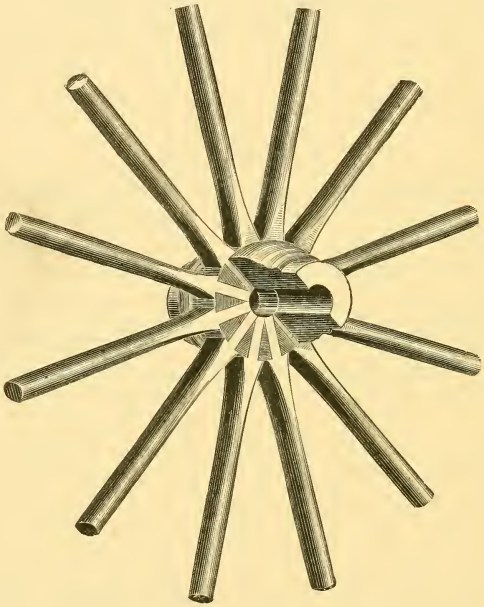
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $\frac{3}{4}$ to $1\frac{1}{4}$ in. | spoke-wheels | inclusive, | not more | than | $\frac{1}{4}$ in. | deeper | than | spoke is wide |
| $1\frac{3}{8}$ to $1\frac{5}{8}$ | " | " | " | " | $\frac{3}{8}$ | " | " | " |
| $1\frac{3}{4}$ to $2\frac{1}{4}$ | " | " | " | " | $\frac{1}{2}$ | " | " | " |
| $2\frac{3}{8}$ to 3 | " | " | " | " | $\frac{5}{8}$ | " | " | " |



Common or usual Style Wood Hub Wheel.



"Sarven" Patent Wheel.



Section showing Usual Style Wood Hub Wheel.

Usual (New York) Style Wheels at $15.00, $12.00, $9.50, and $7.00 per set.

# Not Patented Wheels.

Be particular to give quality, also height and all other dimensions possible.

| Per Set. | Usual Style Wood Hub Wheels. | | | | Sharp Edge Spokes, English Style. | |
|---|---|---|---|---|---|---|
| | Extra. | No. 1. | No. 2. | No. 3. | Extra. | No. 1. |
| With $1\frac{1}{8}$ in. Spokes and under. | $15.00 | $12.00 | $ 9.50 | $ 7.00 | $16.00 | $13.00 |
| " $1\frac{3}{16}$ and $1\frac{1}{4}$ in. Spokes. | 16.00 | 13.00 | 10.00 | 8.00 | 17.00 | 14.00 |
| " $1\frac{5}{16}$ " | 16.50 | 13.50 | 11.00 | 8.50 | 17.50 | 14.50 |
| " $1\frac{3}{8}$ " | 17.00 | 14.00 | 12.00 | 9.00 | 18.00 | 15.00 |
| " $1\frac{7}{16}$ " | 18.00 | 15.00 | 12.50 | 9.50 | 19.00 | 16.00 |
| " $1\frac{1}{2}$ " | 19.00 | 16.00 | 13.00 | 10.00 | 20.00 | 17.00 |
| " $1\frac{9}{16}$ " | 20.50 | 17.50 | 14.00 | 10.50 | 21.50 | 18.50 |
| " $1\frac{5}{8}$ " | 22.00 | 19.00 | 15.00 | 11.00 | 23.00 | 20.00 |
| " $1\frac{11}{16}$ " | 23.50 | 20.00 | 16.00 | 12.00 | 24.50 | 21.00 |
| " $1\frac{3}{4}$ " | 25.00 | 21.00 | 17.00 | 13.00 | 26.00 | 22.00 |
| " $1\frac{7}{8}$ " | 28.00 | 24.00 | 20.00 | 15.00 | 29.00 | 25.00 |
| " 2 " | 30.00 | 26.00 | 22.00 | 18.00 | 31.00 | 27.00 |
| " $2\frac{1}{4}$ " | 33.00 | 29.00 | 25.00 | 21.00 | 34.00 | 30.00 |
| " $2\frac{1}{2}$ " | 38.00 | 33.00 | 29.00 | 25.00 | | |
| " $2\frac{3}{4}$ " | 42.00 | 36.00 | 32.00 | | | |
| " 3 " | 46.00 | 40.00 | 36.00 | | | |
| " $3\frac{1}{4}$ " | 52.00 | 46.00 | 42.00 | | | |

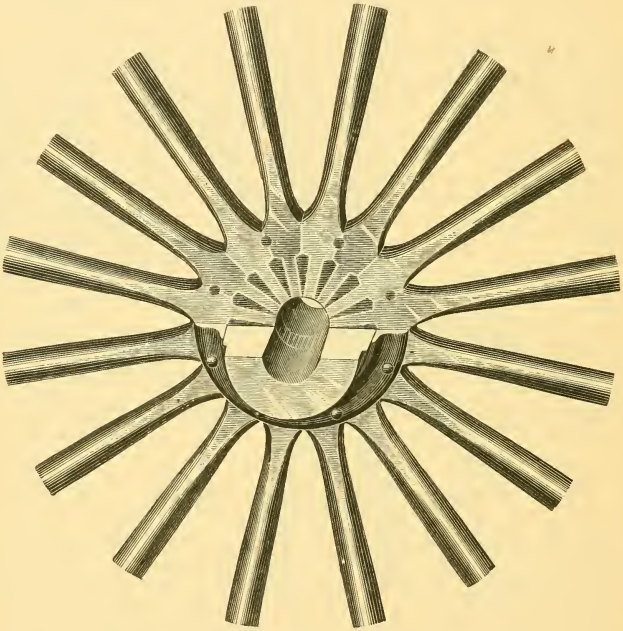
Of Sharp Edge Wheels we make *only the two qualities above quoted.*

# Sulky Wheels—Best.

| Spokes not exceeding 1⅛ inches in width. | Usual Styles. | Warner Patent and Kenney Patent. | Sarven Patent. |
|---|---|---|---|
| 4 feet 6 inches high, per pair, . | $ 9.50 | $10.00 | $10.50 |
| 4 " 7 " " . | 10.50 | 11.00 | 11.50 |
| 4 " 8 " " . | 11.50 | 12.00 | 12.50 |
| 4 " 9 " " . | 12.50 | 13.00 | 13.50 |
| 4 " 10 " " . | 13.50 | 14.00 | 14.50 |
| 4 " 11 " " . | 14.50 | 15.00 | 15.50 |
| 5 " " " . | 15.50 | 16.00 | 16.50 |

Second quality Sulky Wheels cost $2.00 per pair less than prices quoted above. We make but two qualities of Sulky Wheels.

Size of Spokes in above lists is taken as basis of price. Other sizes should be in proportion, otherwise the wheels will be liable to an extra charge.



Section showing interior of genuine "Sarven" Patent Wheel.

Sarven Patent Wheels at $17.00, $14.00, $11.50, and $9.00 per set.

*B*—Is the square bed of axle, conforming in shape and size to the common axle.

*A*—Is the neck, its diameter equal to the cornerwise thickness of the bed.

*O*—Is the arm or bearing; its diameter being considerably greater than the neck.

*C*—Is collar or sand band, of malleable iron, forced upon the neck. Entering between back end of hub and box, as shown, it helps to form the annular recesses "*M* and *N*" to fill with spent grease and exclude sand, grit, etc.

*D*—Is axle box of best quality gray iron. It is without taper inside and outside and is forced into the malleable iron hub. This box has a flange "*e*" cast solid inside near its front end and the leather washers "*f* and *g*" on either side cushion the end of the axle arm and the flange "*d*" of the nut in either direction.

*H*—Is axle nut of malleable iron, hollow as shown, and screwed into the hollow end of axle arm.

*I*—Is malleable iron cap screwing on end of box, preventing loss of axle nut or escape of lubricant and excluding all dirt or grit.

*G*—Is supply of grease filling hollow of arm. By removing cap *I*, insert key through "*j*" in the nut into socket in piston "*P*" and turning forward the grease is expelled through "*h*" and along groove in top of arm to the bearing. To use oil remove the piston "*P*" entirely, clean out all grease from the chamber and holes in *top and bottom*, put on the wheel screw in the nut and with ordinary oiler inject the oil through "*j*" in nut whence it will run to the bearing. In using oil the leather washers "*f* and *g*" should be thick enough to prevent end play but not bind. In using grease the washer or packing shown in the sand collar may be omitted or not, and washers "*f* and *g*" should be free enough to allow a little end play.

These axles are made right and left the same as others. The wheels are not, but the caps on front end of hubs are all threaded right hand. Otherwise all corresponding parts in each size are made interchangeable.

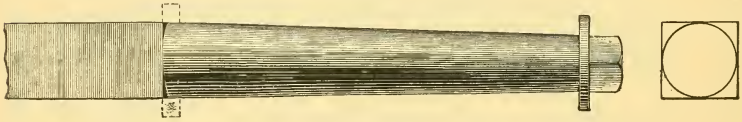
We prefer and advise but little dish in our wheels. Our spokes are driven quite firm and will not draw much in tiring, so do not "draught" the rim too much. Set the axle with very little if any front gather, as the arm is straight. Set the bottom of arms so as to give "plumb spoke" as in other wheels. Do not heat the axles near the collars—give the set in the center. When ready to grease screw out the piston *P*, carefully clean the same and the grease chamber to get all sand and grit out of the threads; also the collar, the hub and all parts. Now fill the chamber *full* of grease, screw in the piston 1 inch to 1¼ inch from the end, far enough to let the axle nut be screwed well home. Put on wheel, screw in the nut securely, insert the key through *j* and turn *forward* three or four revolutions, spinning the wheel at same time.

It is important to see that the foregoing instructions are complied with. Watch the running carefully the first few days or week, then turn out a little fresh grease upon the arm, after which every two to four weeks will be often enough to turn out more. Too much will show at the collar. A little care and experience will be your best guides in this.

Getting started off all right will be a great saving in the future and afford much satisfaction in all respects.

# American Axle and Wheel Company's Patent Axle and Wheel.

NEW STYLE.



OLD STYLE.

The cuts above accurately represent this axle in contrast with one of the ordinary style and of the same size of bed.

The relative size and strength is clearly and fairly shown. This axle *bed* is in all cases the same size and shape as in the common axle, but there all similarity ceases.

In the common style the *arm*, at the collar, where it usually breaks, contains only three-fourths of the metal (76 per cent.) which is in the square of the bed, and at this point it is relatively weaker because of being cut down at a right angle, from which form, the pounding of the wheel causes the metal to crystallize and break, while this axle, beginning some distance back from the arm or bearing, enlarges to a neck with a diameter equal to the cornerwise thickness of the bed, and this neck always and *necessarily* contains *double* the metal, and consequently *more than double the strength* of the common axle-arm, and being made without a square cut shoulder it will never crystallize or break.

# American Axle and Wheel Company's Patent Axle and Wheel.

## PRICE LIST.

N. B.—Only one "Grade" of Goods Made.

| List No. | AXLES. | | WHEELS. | | | Price per Set. |
|---|---|---|---|---|---|---|
| | Size of Bed. | Diam. of Arm. | Pattern No. of Hub. | No. Spokes in Hub. | Size of Spokes. | |
| 1 | $\frac{3}{4}$ | $1\frac{1}{4}$ | 10 | 14 | $\frac{3}{4}$ | $50.00 |
| | | | 19 | 16 | $\frac{3}{4}$ | 50.00 |
| 2 | $\frac{7}{8}$ | $1\frac{1}{2}$ | 20 | 14 | $\frac{7}{8}$ | 50.00 |
| | | | 29 | 16 | $\frac{7}{8}$ | 50.00 |
| 3 | 1 | $1\frac{3}{4}$ | 30 | 14 | 1 | 50.00 |
| | | | 39 | 16 | 1 | 50.00 |
| 4 | $1\frac{1}{8}$ | $1\frac{3}{4}$ | 40 | 14 | $1\frac{1}{8}$ | 50.00 |
| | | | 49 | 16 | $1\frac{1}{8}$ | 50.00 |
| 5 | $1\frac{1}{4}$ | $2\frac{1}{4}$ | 50 | 14 | $1\frac{1}{4}$ | 55.00 |
| | | | 59 | 16 | $1\frac{1}{4}$ | 55.00 |
| 6 | $1\frac{3}{8}$ | $2\frac{1}{4}$ | 60 | 14 | $1\frac{3}{8}$ | 60.00 |
| | | | 69 | 16 | $1\frac{3}{8}$ | 60.00 |
| 7 | $1\frac{1}{2}$ | $2\frac{1}{2}$ | 70 | 14 | $1\frac{1}{2}$ | 65.00 |
| | | | 79 | 16 | $1\frac{1}{2}$ | 65.00 |
| 8 | $1\frac{5}{8}$ | $2\frac{3}{4}$ | 80 | 14 | $1\frac{5}{8}$ | 70.00 |
| | | | 89 | 16 | $1\frac{5}{8}$ | 70.00 |
| 9 | $1\frac{3}{4}$ | 3 | 90 | 14 | $1\frac{3}{4}$ | 80.00 |
| | | | 99 | 16 | $1\frac{3}{4}$ | 80.00 |
| 10 | $1\frac{7}{8}$ | 3 | 100 | 14 | $1\frac{7}{8}$ | 90.00 |
| | | | 109 | 16 | $1\frac{7}{8}$ | 90.00 |
| 11 | 2 | $3\frac{1}{4}$ | 110 | 14 | 2 | 100.00 |
| | | | 119 | 16 | 2 | 100.00 |
| 12 | $2\frac{1}{4}$ | $3\frac{1}{2}$ | 120 | 14 | $2\frac{1}{4}$ | 110.00 |
| | | | 129 | 16 | $2\frac{1}{4}$ | 110.00 |
| 13 | $2\frac{1}{2}$ | $3\frac{3}{4}$ | 130 | 14 | $2\frac{1}{2}$ | 120.00 |
| | | | 139 | 16 | $2\frac{1}{2}$ | 120.00 |
| 14 | $2\frac{3}{4}$ | 4 | 140 | 14 | $2\frac{3}{4}$ | 135.00 |
| | | | 149 | 16 | $2\frac{3}{4}$ | 135.00 |
| 15 | 3 | $4\frac{1}{4}$ | 150 | 14 | 3 | 150.00 |
| | | | 159 | 16 | 3 | 150.00 |

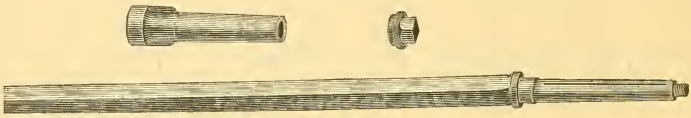
N. B.—No extra charge for Coach Bed Axles.

N. B.—No Banding, Boring or Boxing is required. Wheels are ready for use, except Tiring.

N. B.—No extra charge for Wrenches, Washers or Lubricator.

N. B.—For extra-height wheels, for extra-sized rims, and for screws or rivets in rims, the customary extra charge is made.

N. B.—Spokes for re-filling, finished ready to drive, may be ordered by "Pattern No. of Hub."



# Swelled Half Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Short Bed, . . . | $4.25 | 4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 |
| 28 | Long Bed, . . . | 5.25 | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| $15\frac{1}{2}$ | Short Bed, . . . | $4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 | 16.25 |
| $8\frac{1}{2}$ | Long Bed, . . . | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 | 20.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

Coach Beds to $1\frac{1}{4}$. 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

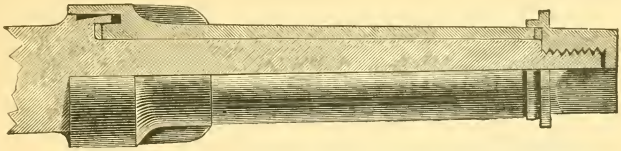
| No. | Swelled, Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Short Bed, . . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 8 | Long Bed, . . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Second Quality Iron Solid Collar Axles.

| No. | Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 Plain, $13\frac{1}{2}$ Swelled, | Short Bed, . | $2.75 | 3.25 | 4.00 | 5.25 | 6.75 | 8.75 | 11.00 | 13.50 | 17.00 |
| 6 Plain, $6\frac{1}{2}$ Swelled, | Long Bed, . | 3.50 | 4.13 | 5.13 | 6.75 | 8.50 | 10.75 | 13.25 | 16.25 | 20.50 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12 additional.
Coach Beds, to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents per set additional.



MILLER'S PATENT AXLE.

PRICES OF

# Miller's Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 41 | Short Bed, . . . | $4.50 | 4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 |
| 42 | Long Bed, . . . | 5.50 | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 43 | Short Bed, . . . | $4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 | 16.50 |
| 44 | Long Bed, . . . | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 | 20.50 |
| | Wrought Iron Case-Hardened Boxes extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

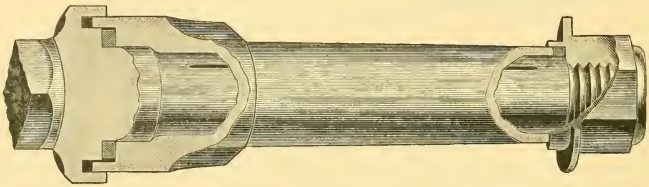
Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 45 | Short Bed, . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 46 | Long Bed, . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds, $\frac{3}{4}$ to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

# Half Patent Collinge Collar Axles.



## Bessemer Steel Solid Collar.

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 71 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 72 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

## Best Quality Steel Converted Iron Solid Collar.

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 73 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 74 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

# Steele's Patent Sand Box Axles.

(See cuts on page 24).

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

Coach Beds to $1\frac{1}{4}$ inch, 30 cents; $1\frac{1}{4}$ inch and larger, 60 cents per set, extra.

**Bessemer Steel.**

| No. | | $\frac{5}{8}$ to $\frac{3}{4}$ | $\frac{7}{8}$ | 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Short Beds, . . | $4.25 | 4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 |
| 3 | Long Beds, . . | 5.00 | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 |

**Best Quality Steel Converted Iron, Solid Collar.**

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Short Beds, . . | $4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 | 17.00 |
| 2 | Long Beds, . . | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 | 19.75 |

**Second Quality Iron, Solid Collar.**

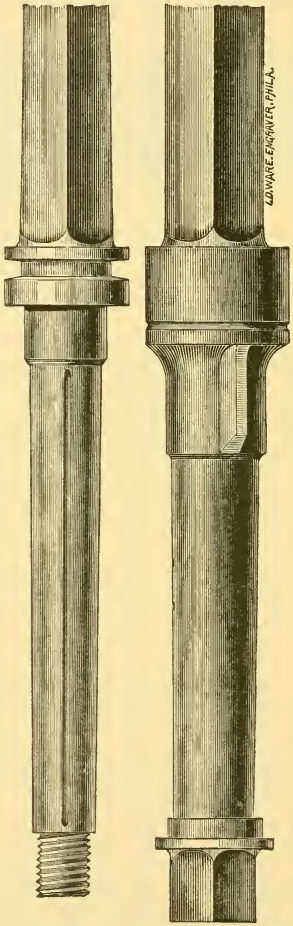
| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Short Beds, . . | $3.00 | 3.50 | 4.25 | 5.88 | 7.38 | 9.25 | 11.38 | 14.00 |
| 1 | Long Beds, . . | 3.75 | 4.38 | 5.50 | 7.25 | 9.00 | 11.13 | 13.50 | 17.00 |

Add to List Price for Case-Hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12; Steel Converting, $\frac{3}{4}$ to $1\frac{3}{8}$, $1.12; $1\frac{3}{8}$ and larger, $2.20.

---

**Common, Concord, Miller's Patent Oil Nut, Steele's Patent Oil Nut, Full and Half Collinge, Half Patent Collinge Collar, Killam Patent Spring Washer, Stiver's Long Swell Miller Patent and other styles of Axles furnished when desired.**

# Steele's Patent Sand Box Axles.



ANNULLING ALL PREVIOUS LISTS.

EDWARD E. BRADLEY, President. ERASTUS A. DOOLITTLE, Secretary.

# PRICE LIST

No. 44.

# New Haven Wheel Co.

MANUFACTURERS OF

## VEHICLE WHEELS.

*Usual Styles, English Sharp Edge,*

*Sarven Patent, Warner Patent,*

*Patent Banded Hub*

*and Fire Department Wheels,*

— ALSO —

*American Axle and Wheel Co's Patent Axle and Wheel.*

NEW HAVEN, CONN., U. S. A.

1889.

SECOND GROWTH

# EASTERN TIMBER

*A Specialty in our Manufactures.*

DEALERS IN

## Miller's Patent, Steele's Patent, Half Patent and other Axles.

*WHEELS OF ALL SIZES TIRED*

—AND—

Axle Boxes accurately set in Hubs whenever desired.

---

## CONTENTS.


| | Page. |
|---|---|
| Usual Styles Wheels, | 7 |
| Sulky Wheels, | 7 |
| Sarven Patent Wheels, | 9 |
| Warner Patent Wheels, | 11 |
| Kenney Patent Banded Hub Wheels, | 12 |
| Patent Back Bands for Hubs, | 13 |
| Spokes, Rims and Hubs, | 14 |
| Ironing (Tiring, Boxing, etc.), | 15 |
| American Axle and Wheel Co.'s Patent Axle and Wheel, | 16–19 |
| Axles (Half Patent), | 20 |
| Axles (Miller's Patent), | 21 |
| Axles, Half Patent Collinge Collar, | 22 |
| Axles (Steele's Patent), | 23 |


TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

ESTABLISHED 1845.

# New Haven Wheel Company.

*TO OUR PATRONS:*

We take pleasure in presenting the trade with our 1889 Price List herewith and trust it will be found entirely satisfactory.

No changes to speak of have been made in the prices of goods heretofore quoted. A few more sizes of wheels have been added this year, also a new axle and wheel which are mentioned more particularly below. We never felt better prepared to serve our customers in every department of our business than at present.

It will be our constant and utmost endeavor in the future, as in the past, to give our customers perfect satisfaction; and the added improvements which the experience of nearly forty-five years in the business has suggested, give us faith to believe that our success in so doing is beyond experiment.

We have now on hand a very large stock of *seasoned second growth Hickory and White Oak*, and with the best modern machinery and long experience in the business feel that we are enabled to furnish the *best wheels made for the prices charged.* We challenge a comparison, at equal cost, with any and all other makes of wheels, for *style, durability* and *strength.*

We desire to call particular attention to our light wheels. They are all made of pure second growth Hickory spokes and rims and Elm hubs, carefully seasoned and put together, nicely finished and the prices for them will be found very reasonable.

It seems hardly necessary for us to especially notice our unpatented styles of Wheels, which include English, and Common styles, they being so thoroughly well known already. A steadily increasing trade from 1845 down to the present time attests the care we take with them, and their consequent value. It is our intention, and will be our constant endeavor in the future, to *excel* in these lines of work. We make but two qualities ("Extra" and "No. 1") of Wheels having Sharp Edged (English Style) Spokes. Of the usual styles Wood Hub Wheels, we make *four* qualities, viz: Extra, No. 1, No. 2, and No. 3.

We have very desirable Spoke Patterns, etc., for light wheels for road wagons and other light driving vehicles. We ask a special trial for these, believing them to be the most stylish and durable wheels of the kind made.

We make four grades of the light sizes of the genuine "Sarven" Wheel, designated A, B, C and D respectively.

We shall continue to pay special attention to the *first class* (A) Sarven Wheel, which has been adjudged by the public, after more than thirty years' use, the BEST PATENT WHEEL MADE. The lower grades are made in order to supply the constant demand for good durable wheels at moderate prices. As such we confidently recommend them.

We also make four qualities of the Warner Patent Wheel, designated XXXX, XXX, XX and X respectively. This wheel has now been before the trade for some twenty years, and has been accepted and approved on its merits. It is a favorite wheel, very reliable, and its use is quite widely extended.

Of the Kenney Patent Banded Hub Wheels we also make four qualities of the light sizes, designated XXXX, XXX, XX and X respectively. This excellent wheel has been thoroughly tried, is very popular and continues to grow in public favor.

During the past four years we have manufactured the wheels sold by the American Axle and Wheel Company of New York, and through this experience have carefully observed the growth and character of their trade. The great merit both in their axle and wheel, as well as their superior lubricating device, have led us to arrange with that company to offer their goods to our trade, which we do in this issue. They make but one grade of these goods, and that strictly the best.

For the purpose of meeting a demand both at home and abroad, and especially in those places where properly skilled labor, pertaining to this branch of business, is not readily attainable, we some years ago added to our wheel business the tiring, boxing and banding of wheels; also the furnishing of axles. Our customers are thereby enabled to procure their wheels simply finished in the wood, or to procure them tired, or tired, banded and boxed, and with any usual style or make of axles they desire. This department is greatly appreciated by many of our customers, who use it frequently and find it of great convenience and advantage.

We ask a fair trial for all our work. Thanking our many friends and customers for generous favors in the past and trusting to receive and merit such in the future, we remain, with great respect,

NEW HAVEN WHEEL CO.

NEW HAVEN, CONN., U. S. A.
JANUARY 1ST, 1889.

N. B.—The price of Screwing or Riveting rims of all styles of wheels is given on page 7, and is governed always by the *width of tread.*

Be particular to give all dimensions possible when ordering wheels, as all omissions will be supplied by us, and customers must take the risk of their being right.

No wheels warranted unless length of tenon is greater than width of spoke at shoulder after hubs are cut out for axle boxes.

Printed blanks or blank books for ordering wheels furnished on application.

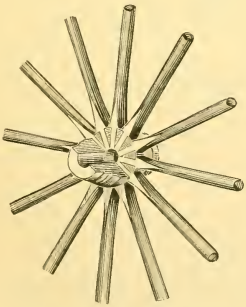
## MAXIMUM SIZES.

If height of wheels (all styles) exceeds 4 feet front and 4 feet 8 inches back, on sets, or 4 feet 4 inches on pairs, they will be subject to an additional charge of 50 cents per inch per wheel for all such excess.

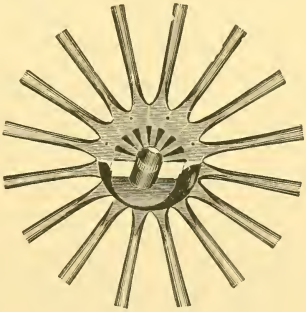
If width of tread exceeds width of spokes at hub an extra charge may be made.

If *Depth of Rims* exceeds the following an extra charge may be made.

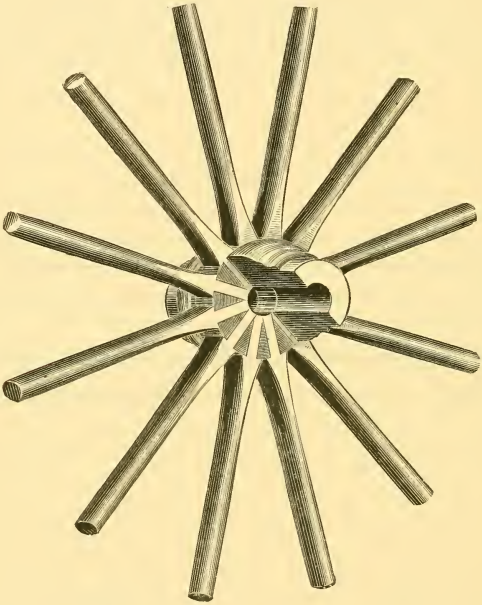
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $\frac{3}{4}$ to $1\frac{1}{4}$ in. | spoke-wheels | inclusive, | not more than | $\frac{1}{4}$ in. | deeper | than spoke | is wide |
| $1\frac{3}{8}$ to $1\frac{5}{8}$ | " | " | " | " $\frac{3}{8}$ | " | " | " |
| $1\frac{3}{4}$ to $2\frac{1}{4}$ | " | " | " | " $\frac{1}{2}$ | " | " | " |
| $2\frac{3}{8}$ to 3 | " | " | " | " $\frac{5}{8}$ | " | " | " |



Common or usual Style Wood Hub Wheel.



"Sarven" Patent Wheel.



Section showing Usual Style Wood Hub Wheel.

Usual (New York) Style Wheels at $15,00, $12.00, $9.50, and $7.00 per set.

# Not Patented Wheels.

Be particular to give quality, also height and all other dimensions possible.

| Per Set. | Usual Style Wood Hub Wheels. | | | | Sharp Edge Spokes, English Style. | |
|---|---|---|---|---|---|---|
| | Extra. | No. 1. | No. 2. | No. 3. | Extra. | No. 1. |
| With $1\frac{1}{8}$ in. Spokes and under. | $15.00 | $12.00 | $ 9.50 | $ 7.00 | $16.00 | $13.00 |
| " $1\frac{3}{16}$ and $1\frac{1}{4}$ in. Spokes. | 16.00 | 13.00 | 10.00 | 8.00 | 17.00 | 14.00 |
| " $1\frac{5}{16}$ " | 16.50 | 13.50 | 11.00 | 8.50 | 17.50 | 14.50 |
| " $1\frac{3}{8}$ " | 17.00 | 14.00 | 12.00 | 9.00 | 18.00 | 15.00 |
| " $1\frac{7}{16}$ " | 18.00 | 15.00 | 12.50 | 9.50 | 19.00 | 16.00 |
| " $1\frac{1}{2}$ " | 19.00 | 16.00 | 13.00 | 10.00 | 20.00 | 17.00 |
| " $1\frac{9}{16}$ " | 20.50 | 17.50 | 14.00 | 10.50 | 21.50 | 18.50 |
| " $1\frac{5}{8}$ " | 22.00 | 19.00 | 15.00 | 11.00 | 23.00 | 20.00 |
| " $1\frac{11}{16}$ " | 23.50 | 20.00 | 16.00 | 12.00 | 24.50 | 21.00 |
| " $1\frac{3}{4}$ " | 25.00 | 21.00 | 17.00 | 13.00 | 26.00 | 22.00 |
| " $1\frac{7}{8}$ " | 28.00 | 24.00 | 20.00 | 15.00 | 29.00 | 25.00 |
| " 2 " | 30.00 | 26.00 | 22.00 | 18.00 | 31.00 | 27.00 |
| " $2\frac{1}{4}$ " | 33.00 | 29.00 | 25.00 | 21.00 | 34.00 | 30.00 |
| " $2\frac{1}{2}$ " | 38.00 | 33.00 | 29.00 | 25.00 | | |
| " $2\frac{3}{4}$ " | 42.00 | 36.00 | 32.00 | | | |
| " 3 " | 46.00 | 40.00 | 36.00 | | | |
| " $3\frac{1}{4}$ " | 52.00 | 46.00 | 42.00 | | | |

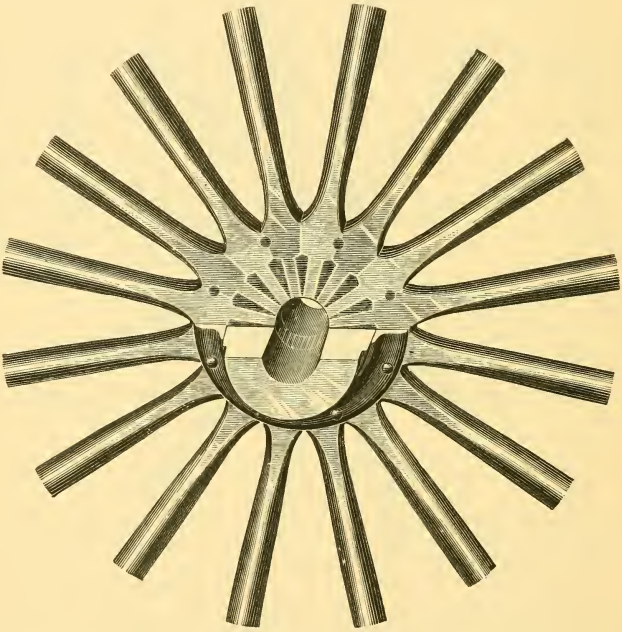
Of Sharp Edge Wheels we make *only the two qualities above quoted.*

# Sulky Wheels—Best.

| Spokes not exceeding 1⅛ inches in width. | Usual Styles. | Warner Patent and Kenney Patent. | Sarven Patent. |
|---|---|---|---|
| 4 feet 6 inches high, per pair, . | $ 9.50 | $10.00 | $10.50 |
| 4 " 7 " " . | 10.50 | 11.00 | 11.50 |
| 4 " 8 " " . | 11.50 | 12.00 | 12.50 |
| 4 " 9 " " . | 12.50 | 13.00 | 13.50 |
| 4 " 10 " " . | 13.50 | 14.00 | 14.50 |
| 4 " 11 " " . | 14.50 | 15.00 | 15.50 |
| 5 " " " . | 15.50 | 16.00 | 16.50 |

Second quality Sulky Wheels cost $2.00 per pair less than prices quoted above. We make but two qualities of Sulky Wheels.

Size of Spokes in above lists is taken as basis of price. Other sizes should be in proportion, otherwise the wheels will be liable to an extra charge.



Section showing interior of genuine "Sarven" Patent Wheel.

Sarven Patent Wheels at $17.00, $14.00, $11.50, and $9.00 per set.

*B*—Is the square bed of axle, conforming in shape and size to the common axle.

*A*—Is the neck, its diameter equal to the cornerwise thickness of the bed.

*O*—Is the arm or bearing; its diameter being considerably greater than the neck.

*C*—Is collar or sand band, of malleable iron, forced upon the neck. Entering between back end of hub and box, as shown, it helps to form the annular recesses "*M* and *N*" to fill with spent grease and exclude sand, grit, etc.

*D*—Is axle box of best quality gray iron. It is without taper inside and outside and is forced into the malleable iron hub. This box has a flange "*e*" cast solid inside near its front end and the leather washers "*f* and *g*" on either side cushion the end of the axle arm and the flange "*d*" of the nut in either direction.

*H*—Is axle nut of malleable iron, hollow as shown, and screwed into the hollow end of axle arm.

*I*—Is malleable iron cap screwing on end of box, preventing loss of axle nut or escape of lubricant and excluding all dirt or grit.

*G*—Is supply of grease filling hollow of arm. By removing cap *I*, insert key through "*j*" in the nut into socket in piston "*P*" and turning forward the grease is expelled through "*h*" and along groove in top of arm to the bearing. To use oil remove the piston "*P*" entirely, clean out all grease from the chamber and holes in *top and bottom*, put on the wheel screw in the nut and with ordinary oiler inject the oil through "*j*" in nut whence it will run to the bearing. In using oil the leather washers "*f* and *g*" should be thick enough to prevent end play but not bind. In using grease the washer or packing shown in the sand collar may be omitted or not, and washers "*f* and *g*" should be free enough to allow a little end play.

These axles are made right and left the same as others. The wheels are not, but the caps on front end of hubs are all threaded right hand. Otherwise all corresponding parts in each size are made interchangeable.

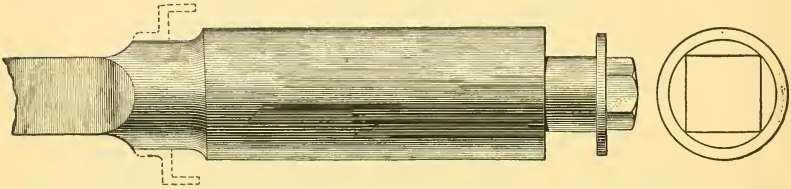
We prefer and advise but little dish in our wheels. Our spokes are driven quite firm and will not draw much in tiring, so do not "draught" the rim too much. Set the axle with very little if any front gather, as the arm is straight. Set the bottom of arms so as to give "plumb spoke" as in other wheels. Do not heat the axles near the collars—give the set in the center. When ready to grease screw out the piston *P*, carefully clean the same and the grease chamber to get all sand and grit out of the threads; also the collar, the hub and all parts. Now fill the chamber *full* of grease, screw in the piston 1 inch to 1¼ inch from the end, far enough to let the axle nut be screwed well home. Put on wheel, screw in the nut securely, insert the key through *j* and turn *forward* three or four revolutions, spinning the wheel at same time.

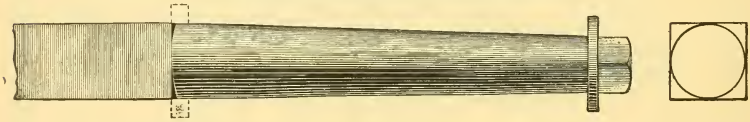
It is important to see that the foregoing instructions are complied with. Watch the running carefully the first few days or week, then turn out a little fresh grease upon the arm, after which every two to four weeks will be often enough to turn out more. Too much will show at the collar. A little care and experience will be your best guides in this.

Getting started off all right will be a great saving in the future and afford much satisfaction in all respects.

# American Axle and Wheel Company's Patent Axle and Wheel.

NEW STYLE.





OLD STYLE.

The cuts above accurately represent this axle in contrast with one of the ordinary style and of the same size of bed.

The relative size and strength is clearly and fairly shown. This axle *bed* is in all cases the same size and shape as in the common axle, but there all similarity ceases.

In the common style the *arm*, at the collar, where it usually breaks, contains only three-fourths of the metal (76 per cent.) which is in the square of the bed, and at this point it is relatively weaker because of being cut down at a right angle, from which form, the pounding of the wheel causes the metal to crystallize and break, while this axle, beginning some distance back from the arm or bearing, enlarges to a neck with a diameter equal to the cornerwise thickness of the bed, and this neck always and *necessarily* contains *double* the metal, and consequently *more than double the strength* of the common axle-arm, and being made without a square cut shoulder it will never crystallize or break.

# American Axle and Wheel Company's Patent Axle and Wheel.

## PRICE LIST.

N. B.—Only one "Grade" of Goods Made.

| List No. | AXLES. | | WHEELS. | | | Price per Set. |
|---|---|---|---|---|---|---|
| | Size of Bed. | Diam. of Arm. | Pattern No. of Hub. | No. Spokes in Hub. | Size of Spokes. | |
| 1 | $\frac{3}{4}$ | $1\frac{1}{4}$ | 10 | 14 | $\frac{3}{4}$ | $50.00 |
| | | | 19 | 16 | $\frac{3}{4}$ | 50.00 |
| 2 | $\frac{7}{8}$ | $1\frac{1}{2}$ | 20 | 14 | $\frac{7}{8}$ | 50.00 |
| | | | 29 | 16 | $\frac{7}{8}$ | 50.00 |
| 3 | 1 | $1\frac{3}{4}$ | 30 | 14 | 1 | 50.00 |
| | | | 39 | 16 | 1 | 50.00 |
| 4 | $1\frac{1}{8}$ | $1\frac{3}{4}$ | 40 | 14 | $1\frac{1}{8}$ | 50.00 |
| | | | 49 | 16 | $1\frac{1}{8}$ | 50.00 |
| 5 | $1\frac{1}{4}$ | $2\frac{1}{4}$ | 50 | 14 | $1\frac{1}{4}$ | 55.00 |
| | | | 59 | 16 | $1\frac{1}{4}$ | 55.00 |
| 6 | $1\frac{3}{8}$ | $2\frac{1}{4}$ | 60 | 14 | $1\frac{3}{8}$ | 60.00 |
| | | | 69 | 16 | $1\frac{3}{8}$ | 60.00 |
| 7 | $1\frac{1}{2}$ | $2\frac{1}{2}$ | 70 | 14 | $1\frac{1}{2}$ | 65.00 |
| | | | 79 | 16 | $1\frac{1}{2}$ | 65.00 |
| 8 | $1\frac{5}{8}$ | $2\frac{3}{4}$ | 80 | 14 | $1\frac{5}{8}$ | 70.00 |
| | | | 89 | 16 | $1\frac{5}{8}$ | 70.00 |
| 9 | $1\frac{3}{4}$ | 3 | 90 | 14 | $1\frac{3}{4}$ | 80.00 |
| | | | 99 | 16 | $1\frac{3}{4}$ | 80.00 |
| 10 | $1\frac{7}{8}$ | 3 | 100 | 14 | $1\frac{7}{8}$ | 90.00 |
| | | | 109 | 16 | $1\frac{7}{8}$ | 90.00 |
| 11 | 2 | $3\frac{1}{4}$ | 110 | 14 | 2 | 100.00 |
| | | | 119 | 16 | 2 | 100.00 |
| 12 | $2\frac{1}{4}$ | $3\frac{1}{2}$ | 120 | 14 | $2\frac{1}{4}$ | 110.00 |
| | | | 129 | 16 | $2\frac{1}{4}$ | 110.00 |
| 13 | $2\frac{1}{2}$ | $3\frac{3}{4}$ | 130 | 14 | $2\frac{1}{2}$ | 120.00 |
| | | | 139 | 16 | $2\frac{1}{2}$ | 120.00 |
| 14 | $2\frac{3}{4}$ | 4 | 140 | 14 | $2\frac{3}{4}$ | 135.00 |
| | | | 149 | 16 | $2\frac{3}{4}$ | 135.00 |
| 15 | 3 | $4\frac{1}{4}$ | 150 | 14 | 3 | 150.00 |
| | | | 159 | 16 | 3 | 150.00 |

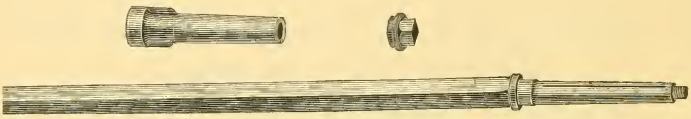
N. B.—No extra charge for Coach Bed Axles.

N. B.—No Banding, Boring or Boxing is required. Wheels are ready for use, except Tiring.

N. B.—No extra charge for Wrenches, Washers or Lubricator.

N. B.—For extra-height wheels, for extra-sized rims, and for screws or rivets in rims, the customary extra charge is made.

N. B.—Spokes for re-filling, finished ready to drive, may be ordered by "Pattern No. of Hub."



# Swelled Half Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Short Bed, . . . | $4.25 | 4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 |
| 28 | Long Bed, . . . | 5.25 | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| $15\frac{1}{2}$ | Short Bed, . . . | $4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 | 16.25 |
| $8\frac{1}{2}$ | Long Bed, . . . | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 | 20.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

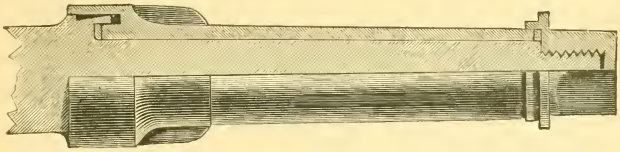
| No. | Swelled, Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Short Bed, . . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 8 | Long Bed, . . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Second Quality Iron Solid Collar Axles.

| No. | Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 Plain, $13\frac{1}{2}$ Swelled, | Short Bed, . | $2.75 | 3.25 | 4.00 | 5.25 | 6.75 | 8.75 | 11.00 | 13.50 | 17.00 |
| 6 Plain, $6\frac{1}{2}$ Swelled, | Long Bed, . | 3.50 | 4.13 | 5.13 | 6.75 | 8.50 | 10.75 | 13.25 | 16.25 | 20.50 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12 additional.
Coach Beds, to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents per set additional.



MILLER'S PATENT AXLE.

PRICES OF

# Miller's Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 41 | Short Bed, . . . | $4.50 | 4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 |
| 42 | Long Bed, . . . | 5.50 | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 43 | Short Bed, . . . | $4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 | 16.50 |
| 44 | Long Bed, . . . | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 | 20.50 |
| | Wrought Iron Case-Hardened Boxes extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

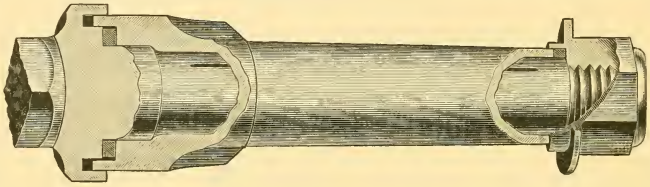
Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 45 | Short Bed, . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 46 | Long Bed, . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds, $\frac{3}{4}$ to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

# Half Patent Collinge Collar Axles.



**Bessemer Steel Solid Collar.**

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 71 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 72 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

**Best Quality Steel Converted Iron Solid Collar.**

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 73 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 74 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

# Steele's Patent Sand Box Axles.

(See cuts on page 24).

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

Coach Beds to $1\frac{1}{4}$ inch, 30 cents; $1\frac{1}{4}$ inch and larger, 60 cents per set, extra.

**Bessemer Steel.**

| No. | | $\frac{5}{8}$ to $\frac{3}{4}$ | $\frac{7}{8}$ | 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Short Beds, . . | $4.25 | 4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 |
| 3 | Long Beds, . . | 5.00 | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 |

**Best Quality Steel Converted Iron, Solid Collar.**

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Short Beds, . . | $4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 | 17.00 |
| 2 | Long Beds, . . | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 | 19.75 |

**Second Quality Iron, Solid Collar.**

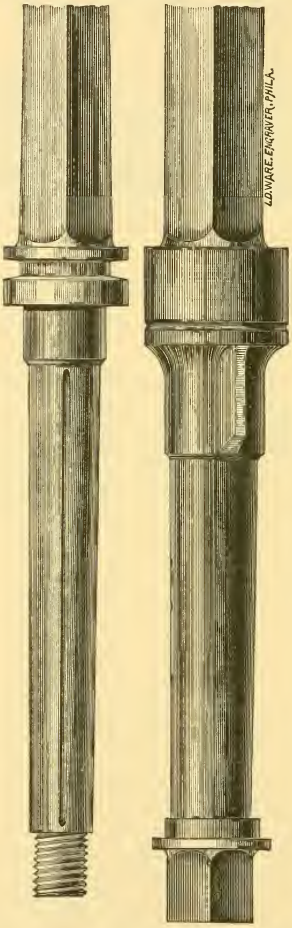
| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Short Beds, . . | $3.00 | 3.50 | 4.25 | 5.88 | 7.38 | 9.25 | 11.38 | 14.00 |
| 1 | Long Beds, . . | 3.75 | 4.38 | 5.50 | 7.25 | 9.00 | 11.13 | 13.50 | 17.00 |

Add to List Price for Case-Hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12; Steel Converting, $\frac{3}{4}$ to $1\frac{3}{8}$, $1.12; $1\frac{3}{8}$ and larger, $2.20.

---

**Common, Concord, Miller's Patent Oil Nut, Steele's Patent Oil Nut, Full and Half Collinge, Half Patent Collinge Collar, Killam Patent Spring Washer, Stiver's Long Swell Miller Patent and other styles of Axles furnished when desired.**

# Steele's Patent Sand Box Axles.



ANNULLING ALL PREVIOUS LISTS.

---

EDWARD E. BRADLEY, President. ERASTUS A. DOOLITTLE, Secretary.

# PRICE LIST

No. 44.

# New Haven Wheel Co.

MANUFACTURERS OF

## VEHICLE WHEELS.

*Usual Styles, English Sharp Edge,*

*Sarven Patent, Warner Patent,*

*Patent Banded Hub*

*and Fire Department Wheels,*

—ALSO—

*American Axle and Wheel Co's Patent Axle and Wheel.*

NEW HAVEN, CONN., U. S. A.

1889.

SECOND GROWTH

# EASTERN TIMBER

*A Specialty in our Manufactures.*

DEALERS IN

## Miller's Patent, Steele's Patent, Half Patent and other Axles.

*WHEELS OF ALL SIZES TIRED*

—AND—

Axle Boxes accurately set in Hubs whenever desired.

---

## CONTENTS.


| | Page. |
|---|---|
| Usual Styles Wheels, | 7 |
| Sulky Wheels, | 7 |
| Sarven Patent Wheels, | 9 |
| Warner Patent Wheels, | 11 |
| Kenney Patent Banded Hub Wheels, | 12 |
| Patent Back Bands for Hubs, | 13 |
| Spokes, Rims and Hubs, | 14 |
| Ironing (Tiring, Boxing, etc.), | 15 |
| American Axle and Wheel Co.'s Patent Axle and Wheel, | 16–19 |
| Axles (Half Patent), | 20 |
| Axles (Miller's Patent), | 21 |
| Axles, Half Patent Collinge Collar, | 22 |
| Axles (Steele's Patent), | 23 |


TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

ESTABLISHED 1845.

# New Haven Wheel Company.

*TO OUR PATRONS:*

We take pleasure in presenting the trade with our 1889 Price List herewith and trust it will be found entirely satisfactory.

No changes to speak of have been made in the prices of goods heretofore quoted. A few more sizes of wheels have been added this year, also a new axle and wheel which are mentioned more particularly below. We never felt better prepared to serve our customers in every department of our business than at present.

It will be our constant and utmost endeavor in the future, as in the past, to give our customers perfect satisfaction; and the added improvements which the experience of nearly forty-five years in the business has suggested, give us faith to believe that our success in so doing is beyond experiment.

We have now on hand a very large stock of *seasoned second growth Hickory and White Oak*, and with the best modern machinery and long experience in the business feel that we are enabled to furnish the *best wheels made for the prices charged.* We challenge a comparison, at equal cost, with any and all other makes of wheels, for *style*, *durability* and *strength.*

We desire to call particular attention to our light wheels. They are all made of pure second growth Hickory spokes and rims and Elm hubs, carefully seasoned and put together, nicely finished and the prices for them will be found very reasonable.

It seems hardly necessary for us to especially notice our unpatented styles of Wheels, which include English, and Common styles, they being so thoroughly well known already. A steadily increasing trade from 1845 down to the present time attests the care we take with them, and their consequent value. It is our intention, and will be our constant endeavor in the future, to *excel* in these lines of work. We make but two qualities ("Extra" and "No. 1") of Wheels having Sharp Edged (English Style) Spokes. Of the usual styles Wood Hub Wheels, we make *four* qualities, viz: Extra, No. 1, No. 2, and No. 3.

We have very desirable Spoke Patterns, etc., for light wheels for road wagons and other light driving vehicles. We ask a special trial for these, believing them to be the most stylish and durable wheels of the kind made.

We make four grades of the light sizes of the genuine "Sarven" Wheel, designated A, B, C and D respectively.

We shall continue to pay special attention to the *first class* (A) Sarven Wheel, which has been adjudged by the public, after more than thirty years' use, the BEST PATENT WHEEL MADE. The lower grades are made in order to supply the constant demand for good durable wheels at moderate prices. As such we confidently recommend them.

We also make four qualities of the Warner Patent Wheel, designated XXXX, XXX, XX and X respectively. This wheel has now been before the trade for some twenty years, and has been accepted and approved on its merits. It is a favorite wheel, very reliable, and its use is quite widely extended.

Of the Kenney Patent Banded Hub Wheels we also make four qualities of the light sizes, designated XXXX, XXX, XX and X respectively. This excellent wheel has been thoroughly tried, is very popular and continues to grow in public favor.

During the past four years we have manufactured the wheels sold by the American Axle and Wheel Company of New York, and through this experience have carefully observed the growth and character of their trade. The great merit both in their axle and wheel, as well as their superior lubricating device, have led us to arrange with that company to offer their goods to our trade, which we do in this issue. They make but one grade of these goods, and that strictly the best.

For the purpose of meeting a demand both at home and abroad, and especially in those places where properly skilled labor, pertaining to this branch of business, is not readily attainable, we some years ago added to our wheel business the tiring, boxing and banding of wheels; also the furnishing of axles. Our customers are thereby enabled to procure their wheels simply finished in the wood, or to procure them tired, or tired, banded and boxed, and with any usual style or make of axles they desire. This department is greatly appreciated by many of our customers, who use it frequently and find it of great convenience and advantage.

We ask a fair trial for all our work. Thanking our many friends and customers for generous favors in the past and trusting to receive and merit such in the future, we remain, with great respect,

NEW HAVEN WHEEL CO.

NEW HAVEN, CONN., U. S. A.
JANUARY 1ST, 1889.

N. B.—The price of Screwing or Riveting rims of all styles of wheels is given on page 7, and is governed always by the *width of tread.*

Be particular to give all dimensions possible when ordering wheels, as all omissions will be supplied by us, and customers must take the risk of their being right.

No wheels warranted unless length of tenon is greater than width of spoke at shoulder after hubs are cut out for axle boxes.

Printed blanks or blank books for ordering wheels furnished on application.

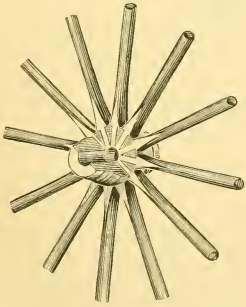
## MAXIMUM SIZES.

If height of wheels (all styles) exceeds 4 feet front and 4 feet 8 inches back, on sets, or 4 feet 4 inches on pairs, they will be subject to an additional charge of 50 cents per inch per wheel for all such excess.

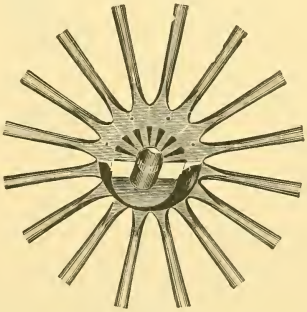
If width of tread exceeds width of spokes at hub an extra charge may be made.

If *Depth of Rims* exceeds the following an extra charge may be made.

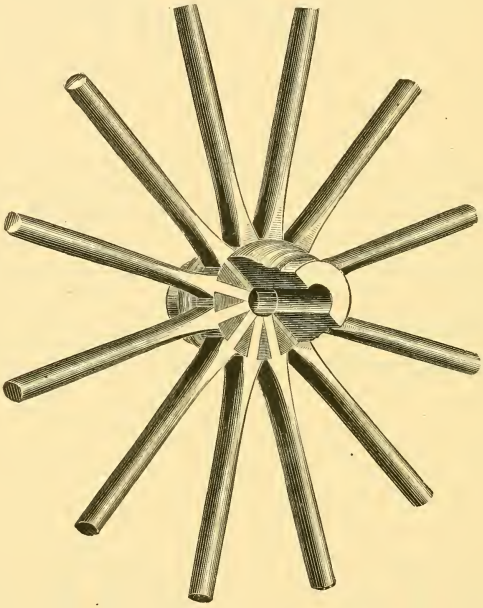
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $\frac{3}{4}$ to $1\frac{1}{4}$ | in. | spoke-wheels | inclusive, | not more than | $\frac{1}{4}$ | in. | deeper | than spoke is wide |
| $1\frac{3}{8}$ to $1\frac{5}{8}$ | " | " | " | " | $\frac{3}{8}$ | " | " | " |
| $1\frac{3}{4}$ to $2\frac{1}{4}$ | " | " | " | " | $\frac{1}{2}$ | " | " | " |
| $2\frac{3}{8}$ to 3 | " | " | " | " | $\frac{5}{8}$ | " | " | " |



Common or usual Style Wood Hub Wheel.



"Sarven" Patent Wheel.



Section showing Usual Style Wood Hub Wheel.

Usual (New York) Style Wheels at $15,00, $12.00, $9.50, and $7.00 per set.

# Not Patented Wheels.

Be particular to give quality, also height and all other dimensions possible.

| Per Set. | Usual Style Wood Hub Wheels. | | | | Sharp Edge Spokes, English Style. | |
|---|---|---|---|---|---|---|
| | Extra. | No. 1. | No. 2. | No. 3. | Extra. | No. 1. |
| With $1\frac{1}{8}$ in. Spokes and under. | $15.00 | $12.00 | $ 9.50 | $ 7.00 | $16.00 | $13.00 |
| " $1\frac{3}{16}$ and $1\frac{1}{4}$ in. Spokes. | 16.00 | 13.00 | 10.00 | 8.00 | 17.00 | 14.00 |
| " $1\frac{5}{16}$ " | 16.50 | 13.50 | 11.00 | 8.50 | 17.50 | 14.50 |
| " $1\frac{3}{8}$ " | 17.00 | 14.00 | 12.00 | 9.00 | 18.00 | 15.00 |
| " $1\frac{7}{16}$ " | 18.00 | 15.00 | 12.50 | 9.50 | 19.00 | 16.00 |
| " $1\frac{1}{2}$ " | 19.00 | 16.00 | 13.00 | 10.00 | 20.00 | 17.00 |
| " $1\frac{9}{16}$ " | 20.50 | 17.50 | 14.00 | 10.50 | 21.50 | 18.50 |
| " $1\frac{5}{8}$ " | 22.00 | 19.00 | 15.00 | 11.00 | 23.00 | 20.00 |
| " $1\frac{11}{16}$ " | 23.50 | 20.00 | 16.00 | 12.00 | 24.50 | 21.00 |
| " $1\frac{3}{4}$ " | 25.00 | 21.00 | 17.00 | 13.00 | 26.00 | 22.00 |
| " $1\frac{7}{8}$ " | 28.00 | 24.00 | 20.00 | 15.00 | 29.00 | 25.00 |
| " 2 " | 30.00 | 26.00 | 22.00 | 18.00 | 31.00 | 27.00 |
| " $2\frac{1}{4}$ " | 33.00 | 29.00 | 25.00 | 21.00 | 34.00 | 30.00 |
| " $2\frac{1}{2}$ " | 38.00 | 33.00 | 29.00 | 25.00 | | |
| " $2\frac{3}{4}$ " | 42.00 | 36.00 | 32.00 | | | |
| " 3 " | 46.00 | 40.00 | 36.00 | | | |
| " $3\frac{1}{4}$ " | 52.00 | 46.00 | 42.00 | | | |

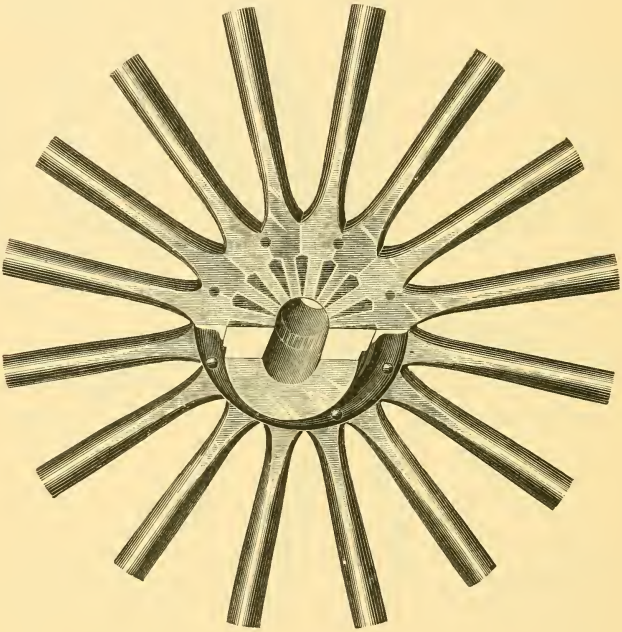
Of Sharp Edge Wheels we make *only the two qualities above quoted.*

# Sulky Wheels—Best.

| SPOKES NOT EXCEEDING 1⅛ INCHES IN WIDTH. | Usual Styles. | Warner Patent and Kenney Patent. | Sarven Patent. |
|---|---|---|---|
| 4 feet 6 inches high, per pair, . | $ 9.50 | $10.00 | $10.50 |
| 4 " 7 " " . | 10.50 | 11.00 | 11.50 |
| 4 " 8 " " . | 11.50 | 12.00 | 12.50 |
| 4 " 9 " " . | 12.50 | 13.00 | 13.50 |
| 4 " 10 " " . | 13.50 | 14.00 | 14.50 |
| 4 " 11 " " . | 14.50 | 15.00 | 15.50 |
| 5 " " " . | 15.50 | 16.00 | 16.50 |

Second quality Sulky Wheels cost $2.00 per pair less than prices quoted above. We make but two qualities of Sulky Wheels.

Size of Spokes in above lists is taken as basis of price. Other sizes should be in proportion, otherwise the wheels will be liable to an extra charge.



Section showing interior of genuine "Sarven" Patent Wheel.

Sarven Patent Wheels at $17.00, $14.00, $11.50, and $9.00 per set.

***B***—Is the square bed of axle, conforming in shape and size to the common axle.

***A***—Is the neck, its diameter equal to the cornerwise thickness of the bed.

***O***—Is the arm or bearing; its diameter being considerably greater than the neck.

***C***—Is collar or sand band, of malleable iron, forced upon the neck. Entering between back end of hub and box, as shown, it helps to form the annular recesses "*M* and *N*" to fill with spent grease and exclude sand, grit, etc.

***D***—Is axle box of best quality gray iron. It is without taper inside and outside and is forced into the malleable iron hub. This box has a flange "*e*" cast solid inside near its front end and the leather washers "*f* and *g*" on either side cushion the end of the axle arm and the flange "*d*" of the nut in either direction.

***H***—Is axle nut of malleable iron, hollow as shown, and screwed into the hollow end of axle arm.

***I***—Is malleable iron cap screwing on end of box, preventing loss of axle nut or escape of lubricant and excluding all dirt or grit.

***G***—Is supply of grease filling hollow of arm. By removing cap *I*, insert key through "*j*" in the nut into socket in piston "*P*" and turning forward the grease is expelled through "*h*" and along groove in top of arm to the bearing. To use oil remove the piston "*P*" entirely, clean out all grease from the chamber and holes in *top and bottom*, put on the wheel screw in the nut and with ordinary oiler inject the oil through "*j*" in nut whence it will run to the bearing. In using oil the leather washers "*f* and *g*" should be thick enough to prevent end play but not bind. In using grease the washer or packing shown in the sand collar may be omitted or not, and washers "*f* and *g*" should be free enough to allow a little end play.

These axles are made right and left the same as others. The wheels are not, but the caps on front end of hubs are all threaded right hand. Otherwise all corresponding parts in each size are made interchangeable.

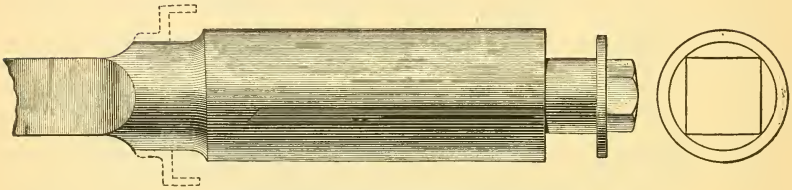
We prefer and advise but little dish in our wheels. Our spokes are driven quite firm and will not draw much in tiring, so do not "draught" the rim too much. Set the axle with very little if any front gather, as the arm is straight. Set the bottom of arms so as to give "plumb spoke" as in other wheels. Do not heat the axles near the collars—give the set in the center. When ready to grease screw out the piston *P*, carefully clean the same and the grease chamber to get all sand and grit out of the threads; also the collar, the hub and all parts. Now fill the chamber *full* of grease, screw in the piston 1 inch to 1¼ inch from the end, far enough to let the axle nut be screwed well home. Put on wheel, screw in the nut securely, insert the key through *j* and turn *forward* three or four revolutions, spinning the wheel at same time.

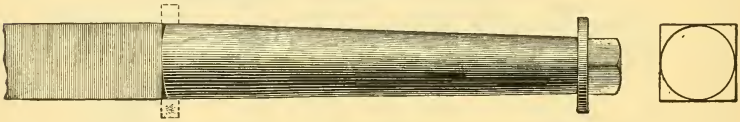
It is important to see that the foregoing instructions are complied with. Watch the running carefully the first few days or week, then turn out a little fresh grease upon the arm, after which every two to four weeks will be often enough to turn out more. Too much will show at the collar. A little care and experience will be your best guides in this.

Getting started off all right will be a great saving in the future and afford much satisfaction in all respects.

# American Axle and Wheel Company's Patent Axle and Wheel.

NEW STYLE.





OLD STYLE.

The cuts above accurately represent this axle in contrast with one of the ordinary style and of the same size of bed.

The relative size and strength is clearly and fairly shown. This axle *bed* is in all cases the same size and shape as in the common axle, but there all similarity ceases.

In the common style the *arm*, at the collar, where it usually breaks, contains only three-fourths of the metal (76 per cent.) which is in the square of the bed, and at this point it is relatively weaker because of being cut down at a right angle, from which form, the pounding of the wheel causes the metal to crystallize and break, while this axle, beginning some distance back from the arm or bearing, enlarges to a neck with a diameter equal to the cornerwise thickness of the bed, and this neck always and *necessarily* contains *double* the metal, and consequently *more than double the strength* of the common axle-arm, and being made without a square cut shoulder it will never crystallize or break.

# American Axle and Wheel Company's Patent Axle and Wheel.

## PRICE LIST.

N. B.—Only one "Grade" of Goods Made.

| List No. | AXLES. | | WHEELS. | | | Price per Set. |
|---|---|---|---|---|---|---|
| | Size of Bed. | Diam. of Arm. | Pattern No. of Hub. | No. Spokes in Hub. | Size of Spokes. | |
| 1 | $\frac{3}{4}$ | $1\frac{1}{4}$ | 10 | 14 | $\frac{3}{4}$ | $50.00 |
| | | | 19 | 16 | $\frac{3}{4}$ | 50.00 |
| 2 | $\frac{7}{8}$ | $1\frac{1}{2}$ | 20 | 14 | $\frac{7}{8}$ | 50.00 |
| | | | 29 | 16 | $\frac{7}{8}$ | 50.00 |
| 3 | 1 | $1\frac{3}{4}$ | 30 | 14 | 1 | 50.00 |
| | | | 39 | 16 | 1 | 50.00 |
| 4 | $1\frac{1}{8}$ | $1\frac{3}{4}$ | 40 | 14 | $1\frac{1}{8}$ | 50.00 |
| | | | 49 | 16 | $1\frac{1}{8}$ | 50.00 |
| 5 | $1\frac{1}{4}$ | $2\frac{1}{4}$ | 50 | 14 | $1\frac{1}{4}$ | 55.00 |
| | | | 59 | 16 | $1\frac{1}{4}$ | 55.00 |
| 6 | $1\frac{3}{8}$ | $2\frac{1}{4}$ | 60 | 14 | $1\frac{3}{8}$ | 60.00 |
| | | | 69 | 16 | $1\frac{3}{8}$ | 60.00 |
| 7 | $1\frac{1}{2}$ | $2\frac{1}{2}$ | 70 | 14 | $1\frac{1}{2}$ | 65.00 |
| | | | 79 | 16 | $1\frac{1}{2}$ | 65.00 |
| 8 | $1\frac{5}{8}$ | $2\frac{3}{4}$ | 80 | 14 | $1\frac{5}{8}$ | 70.00 |
| | | | 89 | 16 | $1\frac{5}{8}$ | 70.00 |
| 9 | $1\frac{3}{4}$ | 3 | 90 | 14 | $1\frac{3}{4}$ | 80.00 |
| | | | 99 | 16 | $1\frac{3}{4}$ | 80.00 |
| 10 | $1\frac{7}{8}$ | 3 | 100 | 14 | $1\frac{7}{8}$ | 90.00 |
| | | | 109 | 16 | $1\frac{7}{8}$ | 90.00 |
| 11 | 2 | $3\frac{1}{4}$ | 110 | 14 | 2 | 100.00 |
| | | | 119 | 16 | 2 | 100.00 |
| 12 | $2\frac{1}{4}$ | $3\frac{1}{2}$ | 120 | 14 | $2\frac{1}{4}$ | 110.00 |
| | | | 129 | 16 | $2\frac{1}{4}$ | 110.00 |
| 13 | $2\frac{1}{2}$ | $3\frac{3}{4}$ | 130 | 14 | $2\frac{1}{2}$ | 120.00 |
| | | | 139 | 16 | $2\frac{1}{2}$ | 120.00 |
| 14 | $2\frac{3}{4}$ | 4 | 140 | 14 | $2\frac{3}{4}$ | 135.00 |
| | | | 149 | 16 | $2\frac{3}{4}$ | 135.00 |
| 15 | 3 | $4\frac{1}{4}$ | 150 | 14 | 3 | 150.00 |
| | | | 159 | 16 | 3 | 150.00 |

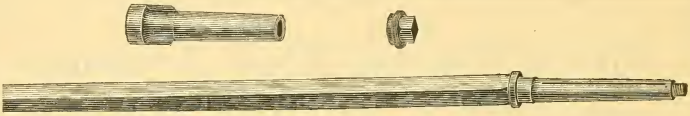
N. B.—No extra charge for Coach Bed Axles.

N. B.—No Banding, Boring or Boxing is required. Wheels are ready for use, except Tiring.

N. B.—No extra charge for Wrenches, Washers or Lubricator.

N. B.—For extra-height wheels, for extra-sized rims, and for screws or rivets in rims, the customary extra charge is made.

N. B.—Spokes for re-filling, finished ready to drive, may be ordered by "Pattern No. of Hub."



# Swelled Half Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Short Bed, . . . | $4.25 | 4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 |
| 28 | Long Bed, . . . | 5.25 | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| $15\frac{1}{2}$ | Short Bed, . . . | $4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 | 16.25 |
| $8\frac{1}{2}$ | Long Bed, . . . | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 | 20.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

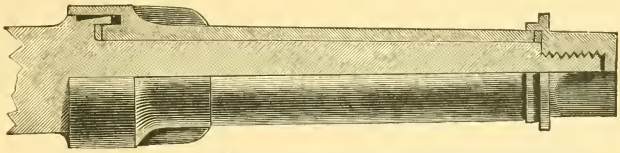
| No. | Swelled, Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Short Bed, . . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 8 | Long Bed, . . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Second Quality Iron Solid Collar Axles.

| No. | Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 Plain, $13\frac{1}{2}$ Swelled, | Short Bed, . | $2.75 | 3.25 | 4.00 | 5.25 | 6.75 | 8.75 | 11.00 | 13.50 | 17.00 |
| 6 Plain, $6\frac{1}{2}$ Swelled, | Long Bed, . | 3.50 | 4.13 | 5.13 | 6.75 | 8.50 | 10.75 | 13.25 | 16.25 | 20.50 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12 additional.
Coach Beds, to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents per set additional.



MILLER'S PATENT AXLE.

## PRICES OF

# Miller's Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 41 | Short Bed, . . . | $4.50 | 4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 |
| 42 | Long Bed, . . . | 5.50 | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 43 | Short Bed, . . . | $4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 | 16.50 |
| 44 | Long Bed, . . . | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 | 20.50 |
| | Wrought Iron Case-Hardened Boxes extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

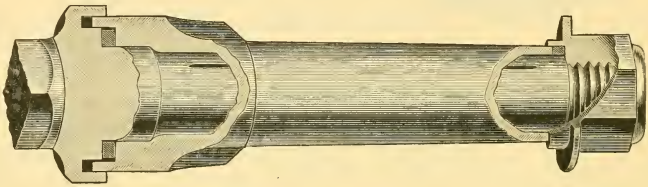
Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 45 | Short Bed, . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 46 | Long Bed, . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds, $\frac{3}{4}$ to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

# Half Patent Collinge Collar Axles.



## Bessemer Steel Solid Collar.

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 71 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 72 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

## Best Quality Steel Converted Iron Solid Collar.

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 73 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 74 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

# Steele's Patent Sand Box Axles.

(See cuts on page 24).

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

Coach Beds to 1¼ inch, 30 cents; 1¼ inch and larger, 60 cents per set, extra.

**Bessemer Steel.**

| No. | | ⅝ to ¾ | ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Short Beds, . . | $4.25 | 4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 |
| 3 | Long Beds, . . | 5.00 | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 |

**Best Quality Steel Converted Iron, Solid Collar.**

| No. | | ¾ to ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Short Beds, . . | $4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 | 17.00 |
| 2 | Long Beds, . . | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 | 19.75 |

**Second Quality Iron, Solid Collar.**

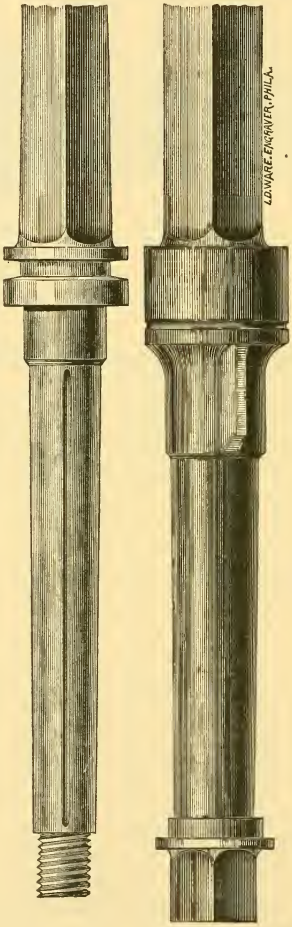
| No. | | ¾ to 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ | 2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Short Beds, . . | $3.00 | 3.50 | 4.25 | 5.88 | 7.38 | 9.25 | 11.38 | 14.00 |
| 1 | Long Beds, . . | 3.75 | 4.38 | 5.50 | 7.25 | 9.00 | 11.13 | 13.50 | 17.00 |

Add to List Price for Case-Hardening, ¾ to 1⅜, 60 cents; 1⅜ and larger, $1.12; Steel Converting, ¾ to 1⅜, $1.12; 1⅜ and larger, $2.20.

---

**Common, Concord, Miller's Patent Oil Nut, Steele's Patent Oil Nut, Full and Half Collinge, Half Patent Collinge Collar, Killam Patent Spring Washer, Stiver's Long Swell Miller Patent and other styles of Axles furnished when desired.**

# Steele's Patent Sand Box Axles.



ANNULLING ALL PREVIOUS LISTS.

---

EDWARD E. BRADLEY, President. ERASTUS A. DOOLITTLE, Secretary.

# PRICE LIST

No. 44.

# New Haven Wheel Co.

MANUFACTURERS OF

## VEHICLE WHEELS.

*Usual Styles, English Sharp Edge,*

*Sarven Patent, Warner Patent,*

*Patent Banded Hub*

*and Fire Department Wheels,*

— ALSO —

*American Axle and Wheel Co's Patent Axle and Wheel.*

NEW HAVEN, CONN., U. S. A.

1889.

SECOND GROWTH

# EASTERN TIMBER

*A Specialty in our Manufactures.*

DEALERS IN

## Miller's Patent, Steele's Patent, Half Patent and other Axles.

*WHEELS OF ALL SIZES TIRED*

—AND—

Axle Boxes accurately set in Hubs whenever desired.

---

## CONTENTS.


| | PAGE. |
|---|---|
| Usual Styles Wheels, | 7 |
| Sulky Wheels, | 7 |
| Sarven Patent Wheels, | 9 |
| Warner Patent Wheels, | 11 |
| Kenney Patent Banded Hub Wheels, | 12 |
| Patent Back Bands for Hubs, | 13 |
| Spokes, Rims and Hubs, | 14 |
| Ironing (Tiring, Boxing, etc.), | 15 |
| American Axle and Wheel Co.'s Patent Axle and Wheel, | 16–19 |
| Axles (Half Patent), | 20 |
| Axles (Miller's Patent), | 21 |
| Axles, Half Patent Collinge Collar, | 22 |
| Axles (Steele's Patent), | 23 |


TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

ESTABLISHED 1845.

# New Haven Wheel Company.

*TO OUR PATRONS:*

We take pleasure in presenting the trade with our 1889 Price List herewith and trust it will be found entirely satisfactory.

No changes to speak of have been made in the prices of goods heretofore quoted. A few more sizes of wheels have been added this year, also a new axle and wheel which are mentioned more particularly below. We never felt better prepared to serve our customers in every department of our business than at present.

It will be our constant and utmost endeavor in the future, as in the past, to give our customers perfect satisfaction; and the added improvements which the experience of nearly forty-five years in the business has suggested, give us faith to believe that our success in so doing is beyond experiment.

We have now on hand a very large stock of *seasoned second growth Hickory and White Oak*, and with the best modern machinery and long experience in the business feel that we are enabled to furnish the *best wheels made for the prices charged.* We challenge a comparison, at equal cost, with any and all other makes of wheels, for *style, durability* and *strength.*

We desire to call particular attention to our light wheels. They are all made of pure second growth Hickory spokes and rims and Elm hubs, carefully seasoned and put together, nicely finished and the prices for them will be found very reasonable.

It seems hardly necessary for us to especially notice our unpatented styles of Wheels, which include English, and Common styles, they being so thoroughly well known already. A steadily increasing trade from 1845 down to the present time attests the care we take with them, and their consequent value. It is our intention, and will be our constant endeavor in the future, to *excel* in these lines of work. We make but two qualities ("Extra" and "No. 1") of Wheels having Sharp Edged (English Style) Spokes. Of the usual styles Wood Hub Wheels, we make *four* qualities, viz: Extra, No. 1, No. 2, and No. 3.

We have very desirable Spoke Patterns, etc., for light wheels for road wagons and other light driving vehicles. We ask a special trial for these, believing them to be the most stylish and durable wheels of the kind made.

We make four grades of the light sizes of the genuine "Sarven" Wheel, designated A, B, C and D respectively.

We shall continue to pay special attention to the *first class* (A) Sarven Wheel, which has been adjudged by the public, after more than thirty years' use, the BEST PATENT WHEEL MADE. The lower grades are made in order to supply the constant demand for good durable wheels at moderate prices. As such we confidently recommend them.

We also make four qualities of the Warner Patent Wheel, designated XXXX, XXX, XX and X respectively. This wheel has now been before the trade for some twenty years, and has been accepted and approved on its merits. It is a favorite wheel, very reliable, and its use is quite widely extended.

Of the Kenney Patent Banded Hub Wheels we also make four qualities of the light sizes, designated XXXX, XXX, XX and X respectively. This excellent wheel has been thoroughly tried, is very popular and continues to grow in public favor.

During the past four years we have manufactured the wheels sold by the American Axle and Wheel Company of New York, and through this experience have carefully observed the growth and character of their trade. The great merit both in their axle and wheel, as well as their superior lubricating device, have led us to arrange with that company to offer their goods to our trade, which we do in this issue. They make but one grade of these goods, and that strictly the best.

For the purpose of meeting a demand both at home and abroad, and especially in those places where properly skilled labor, pertaining to this branch of business, is not readily attainable, we some years ago added to our wheel business the tiring, boxing and banding of wheels; also the furnishing of axles. Our customers are thereby enabled to procure their wheels simply finished in the wood, or to procure them tired, or tired, banded and boxed, and with any usual style or make of axles they desire. This department is greatly appreciated by many of our customers, who use it frequently and find it of great convenience and advantage.

We ask a fair trial for all our work. Thanking our many friends and customers for generous favors in the past and trusting to receive and merit such in the future, we remain, with great respect,

NEW HAVEN WHEEL CO.

NEW HAVEN, CONN., U. S. A.
JANUARY 1ST, 1889.

N. B.—The price of Screwing or Riveting rims of all styles of wheels is given on page 7, and is governed always by the *width of tread.*

Be particular to give all dimensions possible when ordering wheels, as all omissions will be supplied by us, and customers must take the risk of their being right.

No wheels warranted unless length of tenon is greater than width of spoke at shoulder after hubs are cut out for axle boxes.

Printed blanks or blank books for ordering wheels furnished on application.

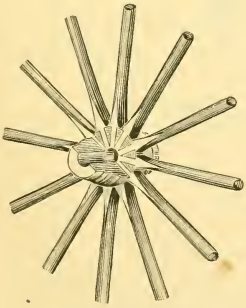
## MAXIMUM SIZES.

If height of wheels (all styles) exceeds 4 feet front and 4 feet 8 inches back, on sets, or 4 feet 4 inches on pairs, they will be subject to an additional charge of 50 cents per inch per wheel for all such excess.

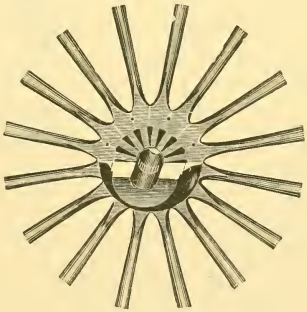
If width of tread exceeds width of spokes at hub an extra charge may be made.

If *Depth of Rims* exceeds the following an extra charge may be made.

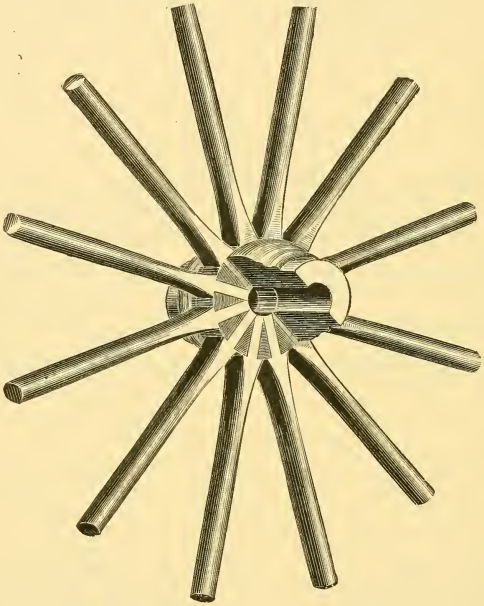
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $\frac{3}{4}$ to $1\frac{1}{4}$ | in. | spoke-wheels | inclusive, | not more | than | $\frac{1}{4}$ | in. | deeper than spoke is wide |
| $1\frac{3}{8}$ to $1\frac{5}{8}$ | " | " | " | " | $\frac{3}{8}$ | " | " | " |
| $1\frac{3}{4}$ to $2\frac{1}{4}$ | " | " | " | " | $\frac{1}{2}$ | " | " | " |
| $2\frac{3}{8}$ to 3 | " | " | " | " | $\frac{5}{8}$ | " | " | " |



Common or usual Style Wood Hub Wheel.



"Sarven" Patent Wheel.



Section showing Usual Style Wood Hub Wheel.

Usual (New York) Style Wheels at $15,00, $12.00, $9.50, and $7.00 per set.

# Not Patented Wheels.

Be particular to give quality, also height and all other dimensions possible.

| Per Set. | Usual Style Wood Hub Wheels. | | | | Sharp Edge Spokes, English Style. | |
|---|---|---|---|---|---|---|
| | Extra. | No. 1. | No. 2. | No. 3. | Extra. | No. 1. |
| With $1\frac{1}{4}$ in. Spokes and under. | $15.00 | $12.00 | $ 9.50 | $ 7.00 | $16.00 | $13.00 |
| " $1\frac{3}{16}$ and $1\frac{1}{4}$ in. Spokes. | 16.00 | 13.00 | 10.00 | 8.00 | 17.00 | 14.00 |
| " $1\frac{5}{16}$ " | 16.50 | 13.50 | 11.00 | 8.50 | 17.50 | 14.50 |
| " $1\frac{3}{8}$ " | 17.00 | 14.00 | 12.00 | 9.00 | 18.00 | 15.00 |
| " $1\frac{7}{16}$ " | 18.00 | 15.00 | 12.50 | 9.50 | 19.00 | 16.00 |
| " $1\frac{1}{2}$ " | 19.00 | 16.00 | 13.00 | 10.00 | 20.00 | 17.00 |
| " $1\frac{9}{16}$ " | 20.50 | 17.50 | 14.00 | 10.50 | 21.50 | 18.50 |
| " $1\frac{5}{8}$ " | 22.00 | 19.00 | 15.00 | 11.00 | 23.00 | 20.00 |
| " $1\frac{11}{16}$ " | 23.50 | 20.00 | 16.00 | 12.00 | 24.50 | 21.00 |
| " $1\frac{3}{4}$ " | 25.00 | 21.00 | 17.00 | 13.00 | 26.00 | 22.00 |
| " $1\frac{7}{8}$ " | 28.00 | 24.00 | 20.00 | 15.00 | 29.00 | 25.00 |
| " 2 " | 30.00 | 26.00 | 22.00 | 18.00 | 31.00 | 27.00 |
| " $2\frac{1}{4}$ " | 33.00 | 29.00 | 25.00 | 21.00 | 34.00 | 30.00 |
| " $2\frac{1}{2}$ " | 38.00 | 33.00 | 29.00 | 25.00 | | |
| " $2\frac{3}{4}$ " | 42.00 | 36.00 | 32.00 | | | |
| " 3 " | 46.00 | 40.00 | 36.00 | | | |
| " $3\frac{1}{4}$ " | 52.00 | 46.00 | 42.00 | | | |

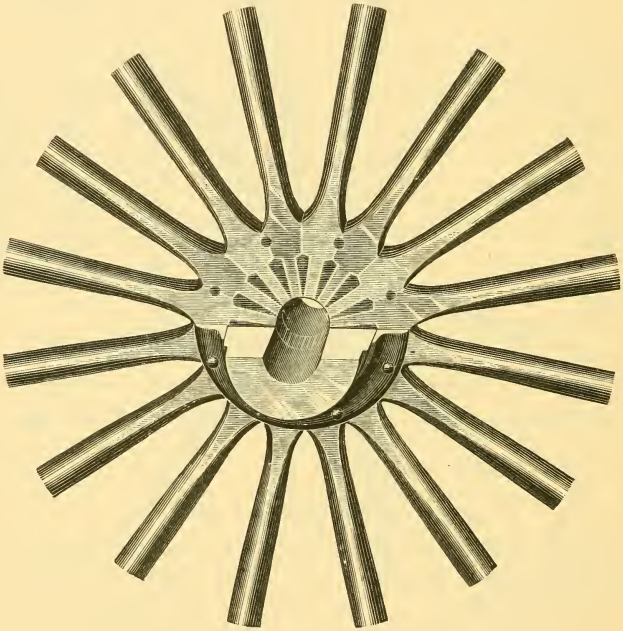
Of Sharp Edge Wheels we make *only the two qualities above quoted.*

# Sulky Wheels—Best.

| Spokes not exceeding $1\frac{1}{8}$ inches in width. | Usual Styles. | Warner Patent and Kenney Patent. | Sarven Patent. |
|---|---|---|---|
| 4 feet 6 inches high, per pair, . | $ 9.50 | $10.00 | $10.50 |
| 4 " 7 " " . | 10.50 | 11.00 | 11.50 |
| 4 " 8 " " . | 11.50 | 12.00 | 12.50 |
| 4 " 9 " " . | 12.50 | 13.00 | 13.50 |
| 4 " 10 " " . | 13.50 | 14.00 | 14.50 |
| 4 " 11 " " . | 14.50 | 15.00 | 15.50 |
| 5 " " " . | 15.50 | 16.00 | 16.50 |

Second quality Sulky Wheels cost $2.00 per pair less than prices quoted above. We make but two qualities of Sulky Wheels.

Size of Spokes in above lists is taken as basis of price. Other sizes should be in proportion, otherwise the wheels will be liable to an extra charge.



Section showing interior of genuine "Sarven" Patent Wheel.

Sarven Patent Wheels at $17.00, $14.00, $11.50, and $9.00 per set.

*B*—Is the square bed of axle, conforming in shape and size to the common axle.

*A*—Is the neck, its diameter equal to the cornerwise thickness of the bed.

*O*—Is the arm or bearing; its diameter being considerably greater than the neck.

*C*—Is collar or sand band, of malleable iron, forced upon the neck. Entering between back end of hub and box, as shown, it helps to form the annular recesses "*M* and *N*" to fill with spent grease and exclude sand, grit, etc.

*D*—Is axle box of best quality gray iron. It is without taper inside and outside and is forced into the malleable iron hub. This box has a flange "*e*" cast solid inside near its front end and the leather washers "*f* and *g*" on either side cushion the end of the axle arm and the flange "*d*" of the nut in either direction.

*H*—Is axle nut of malleable iron, hollow as shown, and screwed into the hollow end of axle arm.

*I*—Is malleable iron cap screwing on end of box, preventing loss of axle nut or escape of lubricant and excluding all dirt or grit.

*G*—Is supply of grease filling hollow of arm. By removing cap *I*, insert key through "*j*" in the nut into socket in piston "*P*" and turning forward the grease is expelled through "*h*" and along groove in top of arm to the bearing. To use oil remove the piston "*P*" entirely, clean out all grease from the chamber and holes in *top and bottom*, put on the wheel screw in the nut and with ordinary oiler inject the oil through "*j*" in nut whence it will run to the bearing. In using oil the leather washers "*f* and *g*" should be thick enough to prevent end play but not bind. In using grease the washer or packing shown in the sand collar may be omitted or not, and washers "*f* and *g*" should be free enough to allow a little end play.

These axles are made right and left the same as others. The wheels are not, but the caps on front end of hubs are all threaded right hand. Otherwise all corresponding parts in each size are made interchangeable.

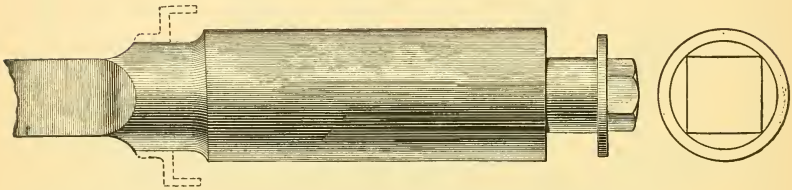
We prefer and advise but little dish in our wheels. Our spokes are driven quite firm and will not draw much in tiring, so do not "draught" the rim too much. Set the axle with very little if any front gather, as the arm is straight. Set the bottom of arms so as to give "plumb spoke" as in other wheels. Do not heat the axles near the collars—give the set in the center. When ready to grease screw out the piston *P*, carefully clean the same and the grease chamber to get all sand and grit out of the threads; also the collar, the hub and all parts. Now fill the chamber *full* of grease, screw in the piston 1 inch to 1¼ inch from the end, far enough to let the axle nut be screwed well home. Put on wheel, screw in the nut securely, insert the key through *j* and turn *forward* three or four revolutions, spinning the wheel at same time.

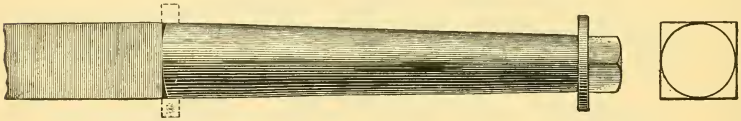
It is important to see that the foregoing instructions are complied with. Watch the running carefully the first few days or week, then turn out a little fresh grease upon the arm, after which every two to four weeks will be often enough to turn out more. Too much will show at the collar. A little care and experience will be your best guides in this.

Getting started off all right will be a great saving in the future and afford much satisfaction in all respects.

# American Axle and Wheel Company's Patent Axle and Wheel.

NEW STYLE.





OLD STYLE.

The cuts above accurately represent this axle in contrast with one of the ordinary style and of the same size of bed.

The relative size and strength is clearly and fairly shown. This axle *bed* is in all cases the same size and shape as in the common axle, but there all similarity ceases.

In the common style the *arm*, at the collar, where it usually breaks, contains only three-fourths of the metal (76 per cent.) which is in the square of the bed, and at this point it is relatively weaker because of being cut down at a right angle, from which form, the pounding of the wheel causes the metal to crystallize and break, while this axle, beginning some distance back from the arm or bearing, enlarges to a neck with a diameter equal to the cornerwise thickness of the bed, and this neck always and *necessarily* contains *double* the metal, and consequently *more than double the strength* of the common axle-arm, and being made without a square cut shoulder it will never crystallize or break.

# American Axle and Wheel Company's Patent Axle and Wheel.

## PRICE LIST.

N. B.—Only one "Grade" of Goods Made.

| List No. | AXLES. | | WHEELS. | | | Price per Set. |
|---|---|---|---|---|---|---|
| | Size of Bed. | Diam. of Arm. | Pattern No. of Hub. | No. Spokes in Hub. | Size of Spokes. | |
| 1 | $\frac{3}{4}$ | $1\frac{1}{4}$ | 10 | 14 | $\frac{3}{4}$ | $50.00 |
| | | | 19 | 16 | $\frac{3}{4}$ | 50.00 |
| 2 | $\frac{7}{8}$ | $1\frac{1}{2}$ | 20 | 14 | $\frac{7}{8}$ | 50.00 |
| | | | 29 | 16 | $\frac{7}{8}$ | 50.00 |
| 3 | 1 | $1\frac{3}{4}$ | 30 | 14 | 1 | 50.00 |
| | | | 39 | 16 | 1 | 50.00 |
| 4 | $1\frac{1}{8}$ | $1\frac{3}{4}$ | 40 | 14 | $1\frac{1}{8}$ | 50.00 |
| | | | 49 | 16 | $1\frac{1}{8}$ | 50.00 |
| 5 | $1\frac{1}{4}$ | $2\frac{1}{4}$ | 50 | 14 | $1\frac{1}{4}$ | 55.00 |
| | | | 59 | 16 | $1\frac{1}{4}$ | 55.00 |
| 6 | $1\frac{3}{8}$ | $2\frac{1}{4}$ | 60 | 14 | $1\frac{3}{8}$ | 60.00 |
| | | | 69 | 16 | $1\frac{3}{8}$ | 60.00 |
| 7 | $1\frac{1}{2}$ | $2\frac{1}{2}$ | 70 | 14 | $1\frac{1}{2}$ | 65.00 |
| | | | 79 | 16 | $1\frac{1}{2}$ | 65.00 |
| 8 | $1\frac{5}{8}$ | $2\frac{3}{4}$ | 80 | 14 | $1\frac{5}{8}$ | 70.00 |
| | | | 89 | 16 | $1\frac{5}{8}$ | 70.00 |
| 9 | $1\frac{3}{4}$ | 3 | 90 | 14 | $1\frac{3}{4}$ | 80.00 |
| | | | 99 | 16 | $1\frac{3}{4}$ | 80.00 |
| 10 | $1\frac{7}{8}$ | 3 | 100 | 14 | $1\frac{7}{8}$ | 90.00 |
| | | | 109 | 16 | $1\frac{7}{8}$ | 90.00 |
| 11 | 2 | $3\frac{1}{4}$ | 110 | 14 | 2 | 100.00 |
| | | | 119 | 16 | 2 | 100.00 |
| 12 | $2\frac{1}{4}$ | $3\frac{1}{2}$ | 120 | 14 | $2\frac{1}{4}$ | 110.00 |
| | | | 129 | 16 | $2\frac{1}{4}$ | 110.00 |
| 13 | $2\frac{1}{2}$ | $3\frac{3}{4}$ | 130 | 14 | $2\frac{1}{2}$ | 120.00 |
| | | | 139 | 16 | $2\frac{1}{2}$ | 120.00 |
| 14 | $2\frac{3}{4}$ | 4 | 140 | 14 | $2\frac{3}{4}$ | 135.00 |
| | | | 149 | 16 | $2\frac{3}{4}$ | 135.00 |
| 15 | 3 | $4\frac{1}{4}$ | 150 | 14 | 3 | 150.00 |
| | | | 159 | 16 | 3 | 150.00 |

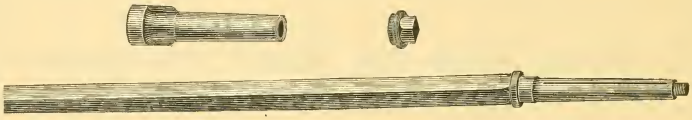
N. B.—No extra charge for Coach Bed Axles.

N. B.—No Banding, Boring or Boxing is required. Wheels are ready for use, except Tiring.

N. B.—No extra charge for Wrenches, Washers or Lubricator.

N. B.—For extra-height wheels, for extra-sized rims, and for screws or rivets in rims, the customary extra charge is made.

N. B.—Spokes for re-filling, finished ready to drive, may be ordered by "Pattern No. of Hub."



# Swelled Half Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Short Bed, . . . | $4.25 | 4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 |
| 28 | Long Bed, . . . | 5.25 | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| $15\frac{1}{2}$ | Short Bed, . . . | $4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 | 16.25 |
| $8\frac{1}{2}$ | Long Bed, . . . | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 | 20.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

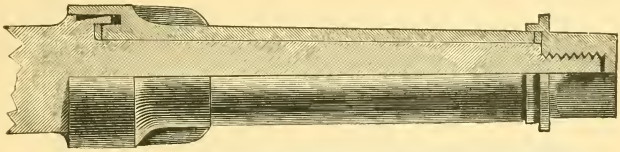
| No. | Swelled, Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Short Bed, . . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 8 | Long Bed, . . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Second Quality Iron Solid Collar Axles.

| No. | Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 Plain, $13\frac{1}{2}$ Swelled, | Short Bed, . | $2.75 | 3.25 | 4.00 | 5.25 | 6.75 | 8.75 | 11.00 | 13.50 | 17.00 |
| 6 Plain, $6\frac{1}{2}$ Swelled, | Long Bed, . | 3.50 | 4.13 | 5.13 | 6.75 | 8.50 | 10.75 | 13.25 | 16.25 | 20.50 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12 additional.
Coach Beds, to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents per set additional.



MILLER'S PATENT AXLE.

## PRICES OF

# Miller's Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 41 | Short Bed, . . . | $4.50 | 4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 |
| 42 | Long Bed, . . . | 5.50 | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 43 | Short Bed, . . . | $4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 | 16.50 |
| 44 | Long Bed, . . . | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 | 20.50 |
| | Wrought Iron Case-Hardened Boxes extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

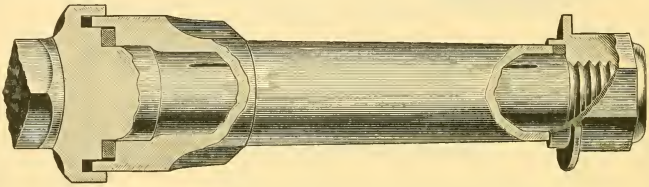
Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 45 | Short Bed, . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 46 | Long Bed, . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds, $\frac{3}{4}$ to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

# Half Patent Collinge Collar Axles.



## Bessemer Steel Solid Collar.

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 71 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 72 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

## Best Quality Steel Converted Iron Solid Collar.

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 73 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 74 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

# Steele's Patent Sand Box Axles.

(See cuts on page 24).

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

Coach Beds to 1¼ inch, 30 cents; 1¼ inch and larger, 60 cents per set, extra.

**Bessemer Steel.**

| No. | | ⅝ to ¾ | ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Short Beds, . . | $4.25 | 4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 |
| 3 | Long Beds, . . | 5.00 | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 |

**Best Quality Steel Converted Iron, Solid Collar.**

| No. | | ¾ to ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Short Beds, . . | $4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 | 17.00 |
| 2 | Long Beds, . . | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 | 19.75 |

**Second Quality Iron, Solid Collar.**

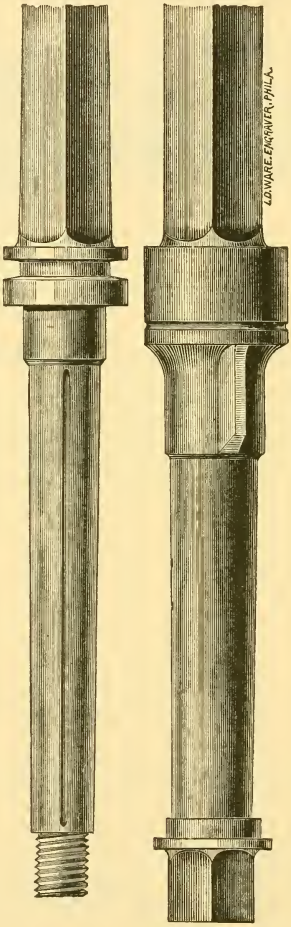
| No. | | ¾ to 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ | 2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Short Beds, . . | $3.00 | 3.50 | 4.25 | 5.88 | 7.38 | 9.25 | 11.38 | 14.00 |
| 1 | Long Beds, . . | 3.75 | 4.38 | 5.50 | 7.25 | 9.00 | 11.13 | 13.50 | 17.00 |

Add to List Price for Case-Hardening, ¾ to 1⅜, 60 cents; 1⅜ and larger, $1.12; Steel Converting, ¾ to 1⅜, $1.12; 1⅜ and larger, $2.20.

---

**Common, Concord, Miller's Patent Oil Nut, Steele's Patent Oil Nut, Full and Half Collinge, Half Patent Collinge Collar, Killam Patent Spring Washer, Stiver's Long Swell Miller Patent and other styles of Axles furnished when desired.**

# Steele's Patent Sand Box Axles.



ANNULLING ALL PREVIOUS LISTS.

---

EDWARD E. BRADLEY, President. ERASTUS A. DOOLITTLE, Secretary.

# PRICE LIST

No. 44.

# New Haven Wheel Co.

MANUFACTURERS OF

## VEHICLE WHEELS.

*Usual Styles, English Sharp Edge,*

*Sarven Patent, Warner Patent,*

*Patent Banded Hub*

*and Fire Department Wheels,*

— ALSO —

*American Axle and Wheel Co's Patent Axle and Wheel.*

NEW HAVEN, CONN., U. S. A.

1889.

SECOND GROWTH

# EASTERN TIMBER

*A Specialty in our Manufactures.*

DEALERS IN

## Miller's Patent, Steele's Patent, Half Patent and other Axles.

*WHEELS OF ALL SIZES TIRED*

—AND—

Axle Boxes accurately set in Hubs whenever desired.

---

## CONTENTS.


| | Page. |
|---|---|
| Usual Styles Wheels, | 7 |
| Sulky Wheels, | 7 |
| Sarven Patent Wheels, | 9 |
| Warner Patent Wheels, | 11 |
| Kenney Patent Banded Hub Wheels, | 12 |
| Patent Back Bands for Hubs, | 13 |
| Spokes, Rims and Hubs, | 14 |
| Ironing (Tiring, Boxing, etc.), | 15 |
| American Axle and Wheel Co.'s Patent Axle and Wheel, | 16–19 |
| Axles (Half Patent), | 20 |
| Axles (Miller's Patent), | 21 |
| Axles, Half Patent Collinge Collar, | 22 |
| Axles (Steele's Patent), | 23 |


TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

ESTABLISHED 1845.

# New Haven Wheel Company.

*TO OUR PATRONS:*

We take pleasure in presenting the trade with our 1889 Price List herewith and trust it will be found entirely satisfactory.

No changes to speak of have been made in the prices of goods heretofore quoted. A few more sizes of wheels have been added this year, also a new axle and wheel which are mentioned more particularly below. We never felt better prepared to serve our customers in every department of our business than at present.

It will be our constant and utmost endeavor in the future, as in the past, to give our customers perfect satisfaction; and the added improvements which the experience of nearly forty-five years in the business has suggested, give us faith to believe that our success in so doing is beyond experiment.

We have now on hand a very large stock of *seasoned second growth Hickory and White Oak*, and with the best modern machinery and long experience in the business feel that we are enabled to furnish the *best wheels made for the prices charged.* We challenge a comparison, at equal cost, with any and all other makes of wheels, for *style, durability* and *strength.*

We desire to call particular attention to our light wheels. They are all made of pure second growth Hickory spokes and rims and Elm hubs, carefully seasoned and put together, nicely finished and the prices for them will be found very reasonable.

It seems hardly necessary for us to especially notice our unpatented styles of Wheels, which include English, and Common styles, they being so thoroughly well known already. A steadily increasing trade from 1845 down to the present time attests the care we take with them, and their consequent value. It is our intention, and will be our constant endeavor in the future, to *excel* in these lines of work. We make but two qualities ("Extra" and "No. 1") of Wheels having Sharp Edged (English Style) Spokes. Of the usual styles Wood Hub Wheels, we make *four* qualities, viz: Extra, No. 1, No. 2, and No. 3.

We have very desirable Spoke Patterns, etc., for light wheels for road wagons and other light driving vehicles. We ask a special trial for these, believing them to be the most stylish and durable wheels of the kind made.

We make four grades of the light sizes of the genuine "Sarven" Wheel, designated A, B, C and D respectively.

We shall continue to pay special attention to the *first class* (A) Sarven Wheel, which has been adjudged by the public, after more than thirty years' use, the BEST PATENT WHEEL MADE. The lower grades are made in order to supply the constant demand for good durable wheels at moderate prices. As such we confidently recommend them.

We also make four qualities of the Warner Patent Wheel, designated XXXX, XXX, XX and X respectively. This wheel has now been before the trade for some twenty years, and has been accepted and approved on its merits. It is a favorite wheel, very reliable, and its use is quite widely extended.

Of the Kenney Patent Banded Hub Wheels we also make four qualities of the light sizes, designated XXXX, XXX, XX and X respectively. This excellent wheel has been thoroughly tried, is very popular and continues to grow in public favor.

During the past four years we have manufactured the wheels sold by the American Axle and Wheel Company of New York, and through this experience have carefully observed the growth and character of their trade. The great merit both in their axle and wheel, as well as their superior lubricating device, have led us to arrange with that company to offer their goods to our trade, which we do in this issue. They make but one grade of these goods, and that strictly the best.

For the purpose of meeting a demand both at home and abroad, and especially in those places where properly skilled labor, pertaining to this branch of business, is not readily attainable, we some years ago added to our wheel business the tiring, boxing and banding of wheels; also the furnishing of axles. Our customers are thereby enabled to procure their wheels simply finished in the wood, or to procure them tired, or tired, banded and boxed, and with any usual style or make of axles they desire. This department is greatly appreciated by many of our customers, who use it frequently and find it of great convenience and advantage.

We ask a fair trial for all our work. Thanking our many friends and customers for generous favors in the past and trusting to receive and merit such in the future, we remain, with great respect,

NEW HAVEN WHEEL CO.

NEW HAVEN, CONN., U. S. A.
JANUARY 1ST, 1889.

N. B.—The price of Screwing or Riveting rims of all styles of wheels is given on page 7, and is governed always by the *width of tread.*

Be particular to give all dimensions possible when ordering wheels, as all omissions will be supplied by us, and customers must take the risk of their being right.

No wheels warranted unless length of tenon is greater than width of spoke at shoulder after hubs are cut out for axle boxes.

Printed blanks or blank books for ordering wheels furnished on application.

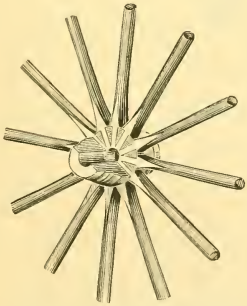
## MAXIMUM SIZES.

If height of wheels (all styles) exceeds 4 feet front and 4 feet 8 inches back, on sets, or 4 feet 4 inches on pairs, they will be subject to an additional charge of 50 cents per inch per wheel for all such excess.

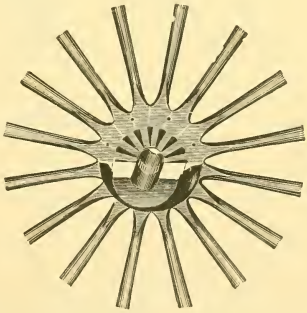
If width of tread exceeds width of spokes at hub an extra charge may be made.

If *Depth of Rims* exceeds the following an extra charge may be made.

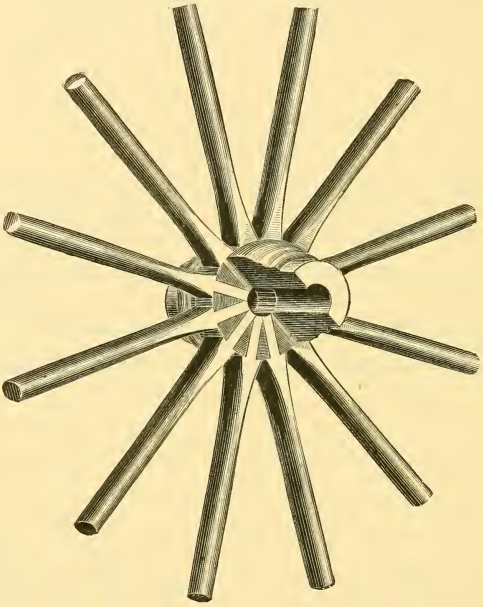
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $\frac{3}{4}$ to $1\frac{1}{4}$ | in. | spoke-wheels | inclusive, | not more | than | $\frac{1}{4}$ | in. | deeper than spoke is wide |
| $1\frac{3}{8}$ to $1\frac{5}{8}$ | " | " | " | " | $\frac{3}{8}$ | " | " | " |
| $1\frac{3}{4}$ to $2\frac{1}{4}$ | " | " | " | " | $\frac{1}{2}$ | " | " | " |
| $2\frac{3}{8}$ to 3 | " | " | " | " | $\frac{5}{8}$ | " | " | " |



Common or usual Style Wood Hub Wheel.



"Sarven" Patent Wheel.



Section showing Usual Style Wood Hub Wheel.

Usual (New York) Style Wheels at $15,00, $12.00, $9.50, and $7.00 per set.

# Not Patented Wheels.

Be particular to give quality, also height and all other dimensions possible.

| Per Set. | Usual Style Wood Hub Wheels. | | | | Sharp Edge Spokes, English Style. | |
|---|---|---|---|---|---|---|
| | Extra. | No. 1. | No. 2. | No. 3. | Extra. | No. 1. |
| With $1\frac{1}{2}$ in. Spokes and under. | $15.00 | $12.00 | $ 9.50 | $ 7.00 | $16.00 | $13.00 |
| " $1\frac{3}{16}$ and $1\frac{1}{4}$ in. Spokes. | 16.00 | 13.00 | 10.00 | 8.00 | 17.00 | 14.00 |
| " $1\frac{5}{16}$ " | 16.50 | 13.50 | 11.00 | 8.50 | 17.50 | 14.50 |
| " $1\frac{3}{8}$ " | 17.00 | 14.00 | 12.00 | 9.00 | 18.00 | 15.00 |
| " $1\frac{7}{16}$ " | 18.00 | 15.00 | 12.50 | 9.50 | 19.00 | 16.00 |
| " $1\frac{1}{2}$ " | 19.00 | 16.00 | 13.00 | 10.00 | 20.00 | 17.00 |
| " $1\frac{9}{16}$ " | 20.50 | 17.50 | 14.00 | 10.50 | 21.50 | 18.50 |
| " $1\frac{5}{8}$ " | 22.00 | 19.00 | 15.00 | 11.00 | 23.00 | 20.00 |
| " $1\frac{11}{16}$ " | 23.50 | 20.00 | 16.00 | 12.00 | 24.50 | 21.00 |
| " $1\frac{3}{4}$ " | 25.00 | 21.00 | 17.00 | 13.00 | 26.00 | 22.00 |
| " $1\frac{7}{8}$ " | 28.00 | 24.00 | 20.00 | 15.00 | 29.00 | 25.00 |
| " 2 " | 30.00 | 26.00 | 22.00 | 18.00 | 31.00 | 27.00 |
| " $2\frac{1}{4}$ " | 33.00 | 29.00 | 25.00 | 21.00 | 34.00 | 30.00 |
| " $2\frac{1}{2}$ " | 38.00 | 33.00 | 29.00 | 25.00 | | |
| " $2\frac{3}{4}$ " | 42.00 | 36.00 | 32.00 | | | |
| " 3 " | 46.00 | 40.00 | 36.00 | | | |
| " $3\frac{1}{4}$ " | 52.00 | 46.00 | 42.00 | | | |

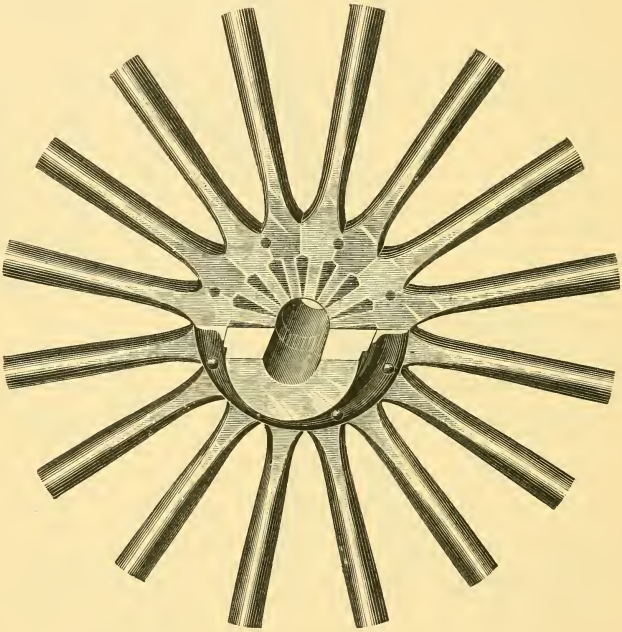
Of Sharp Edge Wheels we make *only the two qualities above quoted.*

# Sulky Wheels—Best.

| Spokes not exceeding $1\frac{1}{8}$ inches in width. | Usual Styles. | Warner Patent and Kenney Patent. | Sarven Patent. |
|---|---|---|---|
| 4 feet 6 inches high, per pair, . | $ 9.50 | $10.00 | $10.50 |
| 4 " 7 " " . | 10.50 | 11.00 | 11.50 |
| 4 " 8 " " . | 11.50 | 12.00 | 12.50 |
| 4 " 9 " " . | 12.50 | 13.00 | 13.50 |
| 4 " 10 " " . | 13.50 | 14.00 | 14.50 |
| 4 " 11 " " . | 14.50 | 15.00 | 15.50 |
| 5 " " " . | 15.50 | 16.00 | 16.50 |

Second quality Sulky Wheels cost $2.00 per pair less than prices quoted above. We make but two qualities of Sulky Wheels.

Size of Spokes in above lists is taken as basis of price. Other sizes should be in proportion, otherwise the wheels will be liable to an extra charge.



Section showing interior of genuine "Sarven" Patent Wheel.

Sarven Patent Wheels at $17.00, $14.00, $11.50, and $9.00 per set.

***B***—Is the square bed of axle, conforming in shape and size to the common axle.

***A***—Is the neck, its diameter equal to the cornerwise thickness of the bed.

***O***—Is the arm or bearing; its diameter being considerably greater than the neck.

***C***—Is collar or sand band, of malleable iron, forced upon the neck. Entering between back end of hub and box, as shown, it helps to form the annular recesses "*M* and *N*" to fill with spent grease and exclude sand, grit, etc.

***D***—Is axle box of best quality gray iron. It is without taper inside and outside and is forced into the malleable iron hub. This box has a flange "*e*" cast solid inside near its front end and the leather washers "*f* and *g*" on either side cushion the end of the axle arm and the flange "*d*" of the nut in either direction.

***H***—Is axle nut of malleable iron, hollow as shown, and screwed into the hollow end of axle arm.

***I***—Is malleable iron cap screwing on end of box, preventing loss of axle nut or escape of lubricant and excluding all dirt or grit.

***G***—Is supply of grease filling hollow of arm. By removing cap *I*, insert key through "*j*" in the nut into socket in piston "*P*" and turning forward the grease is expelled through "*h*" and along groove in top of arm to the bearing. To use oil remove the piston "*P*" entirely, clean out all grease from the chamber and holes in *top and bottom*, put on the wheel screw in the nut and with ordinary oiler inject the oil through "*j*" in nut whence it will run to the bearing. In using oil the leather washers "*f* and *g*" should be thick enough to prevent end play but not bind. In using grease the washer or packing shown in the sand collar may be omitted or not, and washers "*f* and *g*" should be free enough to allow a little end play.

These axles are made right and left the same as others. The wheels are not, but the caps on front end of hubs are all threaded right hand. Otherwise all corresponding parts in each size are made interchangeable.

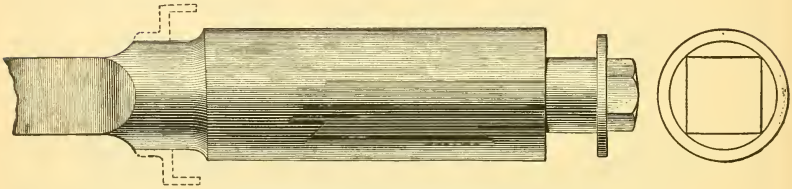
We prefer and advise but little dish in our wheels. Our spokes are driven quite firm and will not draw much in tiring, so do not "draught" the rim too much. Set the axle with very little if any front gather, as the arm is straight. Set the bottom of arms so as to give "plumb spoke" as in other wheels. Do not heat the axles near the collars—give the set in the center. When ready to grease screw out the piston *P*, carefully clean the same and the grease chamber to get all sand and grit out of the threads; also the collar, the hub and all parts. Now fill the chamber *full* of grease, screw in the piston 1 inch to 1¼ inch from the end, far enough to let the axle nut be screwed well home. Put on wheel, screw in the nut securely, insert the key through *j* and turn *forward* three or four revolutions, spinning the wheel at same time.

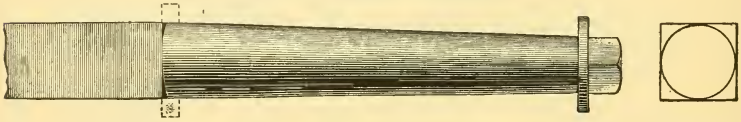
It is important to see that the foregoing instructions are complied with. Watch the running carefully the first few days or week, then turn out a little fresh grease upon the arm, after which every two to four weeks will be often enough to turn out more. Too much will show at the collar. A little care and experience will be your best guides in this.

Getting started off all right will be a great saving in the future and afford much satisfaction in all respects.

# American Axle and Wheel Company's Patent Axle and Wheel.

NEW STYLE.





OLD STYLE.

The cuts above accurately represent this axle in contrast with one of the ordinary style and of the same size of bed.

The relative size and strength is clearly and fairly shown. This axle *bed* is in all cases the same size and shape as in the common axle, but there all similarity ceases.

In the common style the *arm*, at the collar, where it usually breaks, contains only three-fourths of the metal (76 per cent.) which is in the square of the bed, and at this point it is relatively weaker because of being cut down at a right angle, from which form, the pounding of the wheel causes the metal to crystallize and break, while this axle, beginning some distance back from the arm or bearing, enlarges to a neck with a diameter equal to the cornerwise thickness of the bed, and this neck always and *necessarily* contains *double* the metal, and consequently *more than double the strength* of the common axle-arm, and being made without a square cut shoulder it will never crystallize or break.

# American Axle and Wheel Company's Patent Axle and Wheel.

## PRICE LIST.

N. B.—Only one "Grade" of Goods Made.

| List No. | AXLES. | | WHEELS. | | | Price per Set. |
|---|---|---|---|---|---|---|
| | Size of Bed. | Diam. of Arm. | Pattern No. of Hub. | No. Spokes in Hub. | Size of Spokes. | |
| 1 | $\frac{3}{4}$ | $1\frac{1}{4}$ | 10 | 14 | $\frac{3}{4}$ | $50.00 |
| | | | 19 | 16 | $\frac{3}{4}$ | 50.00 |
| 2 | $\frac{7}{8}$ | $1\frac{1}{2}$ | 20 | 14 | $\frac{7}{8}$ | 50.00 |
| | | | 29 | 16 | $\frac{7}{8}$ | 50.00 |
| 3 | 1 | $1\frac{3}{4}$ | 30 | 14 | 1 | 50.00 |
| | | | 39 | 16 | 1 | 50.00 |
| 4 | $1\frac{1}{8}$ | $1\frac{3}{4}$ | 40 | 14 | $1\frac{1}{8}$ | 50.00 |
| | | | 49 | 16 | $1\frac{1}{8}$ | 50.00 |
| 5 | $1\frac{1}{4}$ | $2\frac{1}{4}$ | 50 | 14 | $1\frac{1}{4}$ | 55.00 |
| | | | 59 | 16 | $1\frac{1}{4}$ | 55.00 |
| 6 | $1\frac{3}{8}$ | $2\frac{1}{4}$ | 60 | 14 | $1\frac{3}{8}$ | 60.00 |
| | | | 69 | 16 | $1\frac{3}{8}$ | 60.00 |
| 7 | $1\frac{1}{2}$ | $2\frac{1}{2}$ | 70 | 14 | $1\frac{1}{2}$ | 65.00 |
| | | | 79 | 16 | $1\frac{1}{2}$ | 65.00 |
| 8 | $1\frac{5}{8}$ | $2\frac{3}{4}$ | 80 | 14 | $1\frac{5}{8}$ | 70.00 |
| | | | 89 | 16 | $1\frac{5}{8}$ | 70.00 |
| 9 | $1\frac{3}{4}$ | 3 | 90 | 14 | $1\frac{3}{4}$ | 80.00 |
| | | | 99 | 16 | $1\frac{3}{4}$ | 80.00 |
| 10 | $1\frac{7}{8}$ | 3 | 100 | 14 | $1\frac{7}{8}$ | 90.00 |
| | | | 109 | 16 | $1\frac{7}{8}$ | 90.00 |
| 11 | 2 | $3\frac{1}{4}$ | 110 | 14 | 2 | 100.00 |
| | | | 119 | 16 | 2 | 100.00 |
| 12 | $2\frac{1}{4}$ | $3\frac{1}{2}$ | 120 | 14 | $2\frac{1}{4}$ | 110.00 |
| | | | 129 | 16 | $2\frac{1}{4}$ | 110.00 |
| 13 | $2\frac{1}{2}$ | $3\frac{3}{4}$ | 130 | 14 | $2\frac{1}{2}$ | 120.00 |
| | | | 139 | 16 | $2\frac{1}{2}$ | 120.00 |
| 14 | $2\frac{3}{4}$ | 4 | 140 | 14 | $2\frac{3}{4}$ | 135.00 |
| | | | 149 | 16 | $2\frac{3}{4}$ | 135.00 |
| 15 | 3 | $4\frac{1}{4}$ | 150 | 14 | 3 | 150.00 |
| | | | 159 | 16 | 3 | 150.00 |

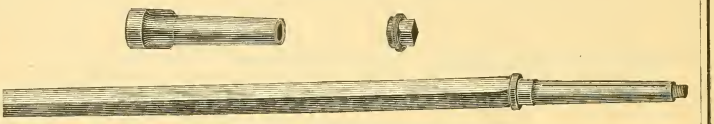
N. B.—No extra charge for Coach Bed Axles.

N. B.—No Banding, Boring or Boxing is required. Wheels are ready for use, except Tiring.

N. B.—No extra charge for Wrenches, Washers or Lubricator.

N. B.—For extra-height wheels, for extra-sized rims, and for screws or rivets in rims, the customary extra charge is made.

N. B.—Spokes for re-filling, finished ready to drive, may be ordered by "Pattern No. of Hub."



# Swelled Half Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Short Bed, . . . | $4.25 | 4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 |
| 28 | Long Bed, . . . | 5.25 | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| $15\frac{1}{2}$ | Short Bed, . . . | $4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 | 16.25 |
| $8\frac{1}{2}$ | Long Bed, . . . | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 | 20.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

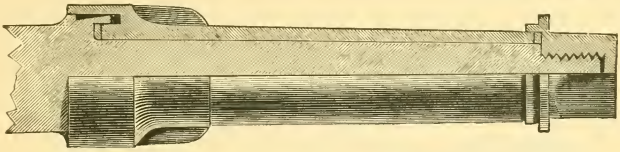
| No. | Swelled, Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Short Bed, . . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 8 | Long Bed, . . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Second Quality Iron Solid Collar Axles.

| No. | Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 Plain, $13\frac{1}{2}$ Swelled, | Short Bed, . | $2.75 | 3.25 | 4.00 | 5.25 | 6.75 | 8.75 | 11.00 | 13.50 | 17.00 |
| 6 Plain, $6\frac{1}{2}$ Swelled, | Long Bed, . | 3.50 | 4.13 | 5.13 | 6.75 | 8.50 | 10.75 | 13.25 | 16.25 | 20.50 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12 additional.
Coach Beds, to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents per set additional.



MILLER'S PATENT AXLE.

PRICES OF

# Miller's Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

## Bessemer Steel Solid Collar Axles.

| No. | | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 41 | Short Bed, . . . | $4.50 | 4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 |
| 42 | Long Bed, . . . | 5.50 | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents ; $1\frac{1}{4}$ and larger, 60 cents advance.

## Best Quality Steel Converted Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 43 | Short Bed, . . . | $4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 | 16.50 |
| 44 | Long Bed, . . . | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 | 20.50 |
| | Wrought Iron Case-Hardened Boxes extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

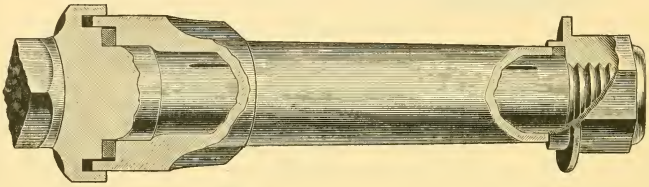
Coach Beds to $1\frac{1}{4}$, 30 cents ; $1\frac{1}{4}$ and larger, 60 cents advance.

## Medium Quality Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 45 | Short Bed, . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 46 | Long Bed, . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents ; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds, $\frac{3}{4}$ to $1\frac{1}{4}$, 30 cents ; $1\frac{1}{4}$ and larger, 60 cents advance.

# Half Patent Collinge Collar Axles.



## Bessemer Steel Solid Collar.

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 71 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 72 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

## Best Quality Steel Converted Iron Solid Collar.

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 73 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 74 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

# Steele's Patent Sand Box Axles.

(See cuts on page 24).

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

Coach Beds to 1¼ inch, 30 cents; 1¼ inch and larger, 60 cents per set, extra.

**Bessemer Steel.**

| No. | | ⅝ to ¾ | ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Short Beds, . . | $4.25 | 4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 |
| 3 | Long Beds, . . | 5.00 | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 |

**Best Quality Steel Converted Iron, Solid Collar.**

| No. | | ¾ to ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Short Beds, . . | $4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 | 17.00 |
| 2 | Long Beds, . . | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 | 19.75 |

**Second Quality Iron, Solid Collar.**

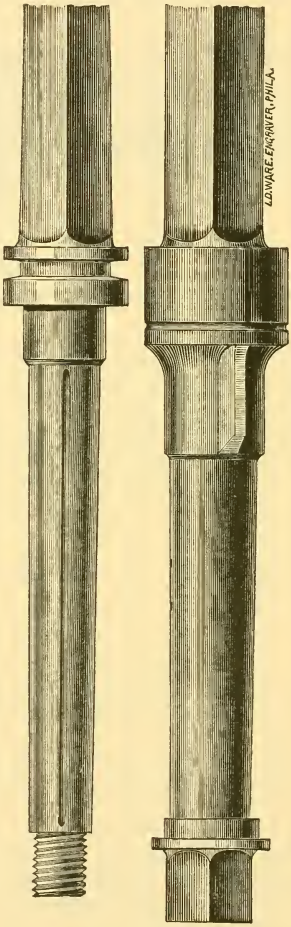
| No. | | ¾ to 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ | 2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Short Beds, . . | $3.00 | 3.50 | 4.25 | 5.88 | 7.38 | 9.25 | 11.38 | 14.00 |
| 1 | Long Beds, . . | 3.75 | 4.38 | 5.50 | 7.25 | 9.00 | 11.13 | 13.50 | 17.00 |

Add to List Price for Case-Hardening, ¾ to 1⅜, 60 cents; 1⅜ and larger, $1.12; Steel Converting, ¾ to 1⅜, $1.12; 1⅜ and larger, $2.20.

---

**Common, Concord, Miller's Patent Oil Nut, Steele's Patent Oil Nut, Full and Half Collinge, Half Patent Collinge Collar, Killam Patent Spring Washer, Stiver's Long Swell Miller Patent and other styles of Axles furnished when desired.**

# Steele's Patent Sand Box Axles.



ANNULLING ALL PREVIOUS LISTS.

EDWARD E. BRADLEY, President. ERASTUS A. DOOLITTLE, Secretary.

# PRICE LIST

No. 44.

# New Haven Wheel Co.

MANUFACTURERS OF

## VEHICLE WHEELS.

*Usual Styles, English Sharp Edge,*

*Sarven Patent, Warner Patent,*

*Patent Banded Hub*

*and Fire Department Wheels,*

— ALSO —

*American Axle and Wheel Co's Patent Axle and Wheel.*

NEW HAVEN, CONN., U. S. A.

1889.

SECOND GROWTH

# EASTERN TIMBER

*A Specialty in our Manufactures.*

DEALERS IN

## Miller's Patent, Steele's Patent, Half Patent and other Axles.

*WHEELS OF ALL SIZES TIRED*

—AND—

Axle Boxes accurately set in Hubs whenever desired.

---

## CONTENTS.


| | Page. |
|---|---|
| Usual Styles Wheels, | 7 |
| Sulky Wheels, | 7 |
| Sarven Patent Wheels, | 9 |
| Warner Patent Wheels, | 11 |
| Kenney Patent Banded Hub Wheels, | 12 |
| Patent Back Bands for Hubs, | 13 |
| Spokes, Rims and Hubs, | 14 |
| Ironing (Tiring, Boxing, etc.), | 15 |
| American Axle and Wheel Co.'s Patent Axle and Wheel, | 16–19 |
| Axles (Half Patent), | 20 |
| Axles (Miller's Patent), | 21 |
| Axles, Half Patent Collinge Collar, | 22 |
| Axles (Steele's Patent), | 23 |


TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

ESTABLISHED 1845.

# New Haven Wheel Company.

*TO OUR PATRONS:*

We take pleasure in presenting the trade with our 1889 Price List herewith and trust it will be found entirely satisfactory.

No changes to speak of have been made in the prices of goods heretofore quoted. A few more sizes of wheels have been added this year, also a new axle and wheel which are mentioned more particularly below. We never felt better prepared to serve our customers in every department of our business than at present.

It will be our constant and utmost endeavor in the future, as in the past, to give our customers perfect satisfaction; and the added improvements which the experience of nearly forty-five years in the business has suggested, give us faith to believe that our success in so doing is beyond experiment.

We have now on hand a very large stock of *seasoned second growth Hickory and White Oak*, and with the best modern machinery and long experience in the business feel that we are enabled to furnish the *best wheels made for the prices charged.* We challenge a comparison, at equal cost, with any and all other makes of wheels, for *style*, *durability* and *strength.*

We desire to call particular attention to our light wheels. They are all made of pure second growth Hickory spokes and rims and Elm hubs, carefully seasoned and put together, nicely finished and the prices for them will be found very reasonable.

It seems hardly necessary for us to especially notice our unpatented styles of Wheels, which include English, and Common styles, they being so thoroughly well known already. A steadily increasing trade from 1845 down to the present time attests the care we take with them, and their consequent value. It is our intention, and will be our constant endeavor in the future, to *excel* in these lines of work. We make but two qualities ("Extra" and "No. 1") of Wheels having Sharp Edged (English Style) Spokes. Of the usual styles Wood Hub Wheels, we make *four* qualities, viz: Extra, No. 1, No. 2, and No. 3.

We have very desirable Spoke Patterns, etc., for light wheels for road wagons and other light driving vehicles. We ask a special trial for these, believing them to be the most stylish and durable wheels of the kind made.

We make four grades of the light sizes of the genuine "Sarven" Wheel, designated A, B, C and D respectively.

We shall continue to pay special attention to the *first class* (A) Sarven Wheel, which has been adjudged by the public, after more than thirty years' use, the BEST PATENT WHEEL MADE. The lower grades are made in order to supply the constant demand for good durable wheels at moderate prices. As such we confidently recommend them.

We also make four qualities of the Warner Patent Wheel, designated XXXX, XXX, XX and X respectively. This wheel has now been before the trade for some twenty years, and has been accepted and approved on its merits. It is a favorite wheel, very reliable, and its use is quite widely extended.

Of the Kenney Patent Banded Hub Wheels we also make four qualities of the light sizes, designated XXXX, XXX, XX and X respectively. This excellent wheel has been thoroughly tried, is very popular and continues to grow in public favor.

During the past four years we have manufactured the wheels sold by the American Axle and Wheel Company of New York, and through this experience have carefully observed the growth and character of their trade. The great merit both in their axle and wheel, as well as their superior lubricating device, have led us to arrange with that company to offer their goods to our trade, which we do in this issue. They make but one grade of these goods, and that strictly the best.

For the purpose of meeting a demand both at home and abroad, and especially in those places where properly skilled labor, pertaining to this branch of business, is not readily attainable, we some years ago added to our wheel business the tiring, boxing and banding of wheels; also the furnishing of axles. Our customers are thereby enabled to procure their wheels simply finished in the wood, or to procure them tired, or tired, banded and boxed, and with any usual style or make of axles they desire. This department is greatly appreciated by many of our customers, who use it frequently and find it of great convenience and advantage.

We ask a fair trial for all our work. Thanking our many friends and customers for generous favors in the past and trusting to receive and merit such in the future, we remain, with great respect,

NEW HAVEN WHEEL CO.

NEW HAVEN, CONN., U. S. A.
JANUARY 1ST, 1889.

N. B.—The price of Screwing or Riveting rims of all styles of wheels is given on page 7, and is governed always by the *width of tread.*

Be particular to give all dimensions possible when ordering wheels, as all omissions will be supplied by us, and customers must take the risk of their being right.

No wheels warranted unless length of tenon is greater than width of spoke at shoulder after hubs are cut out for axle boxes.

Printed blanks or blank books for ordering wheels furnished on application.

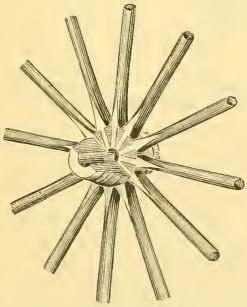
## MAXIMUM SIZES.

If height of wheels (all styles) exceeds 4 feet front and 4 feet 8 inches back, on sets, or 4 feet 4 inches on pairs, they will be subject to an additional charge of 50 cents per inch per wheel for all such excess.

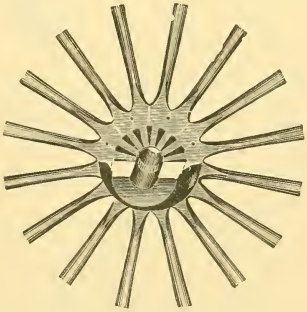
If width of tread exceeds width of spokes at hub an extra charge may be made.

If *Depth of Rims* exceeds the following an extra charge may be made.

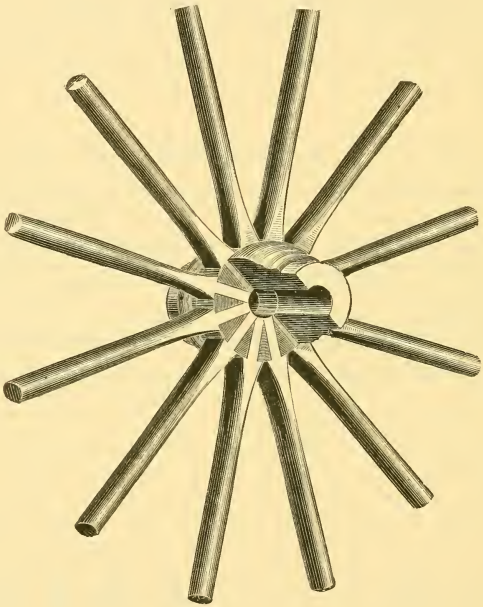
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $\frac{3}{4}$ to $1\frac{1}{4}$ | in. | spoke-wheels | inclusive, | not more | than | $\frac{1}{4}$ | in. | deeper than spoke is wide |
| $1\frac{3}{8}$ to $1\frac{5}{8}$ | " | " | " | " | $\frac{3}{8}$ | " | " | " |
| $1\frac{3}{4}$ to $2\frac{1}{4}$ | " | " | " | " | $\frac{1}{2}$ | " | " | " |
| $2\frac{3}{8}$ to 3 | " | " | " | " | $\frac{5}{8}$ | " | " | " |



Common or usual Style Wood Hub Wheel.



"Sarven" Patent Wheel.



Section showing Usual Style Wood Hub Wheel.

Usual (New York) Style Wheels at $15,00, $12.00, $9.50, and $7.00 per set.

# Not Patented Wheels.

Be particular to give quality, also height and all other dimensions possible.

| Per Set. | Usual Style Wood Hub Wheels. | | | | Sharp Edge Spokes, English Style. | |
|---|---|---|---|---|---|---|
| | Extra. | No. 1. | No. 2. | No. 3. | Extra. | No. 1. |
| With $1\frac{1}{4}$ in. Spokes and under. | $15.00 | $12.00 | $ 9.50 | $ 7.00 | $16.00 | $13.00 |
| " $1\frac{3}{16}$ and $1\frac{1}{4}$ in. Spokes. | 16.00 | 13.00 | 10.00 | 8.00 | 17.00 | 14.00 |
| " $1\frac{5}{16}$ " | 16.50 | 13.50 | 11.00 | 8.50 | 17.50 | 14.50 |
| " $1\frac{3}{8}$ " | 17.00 | 14.00 | 12.00 | 9.00 | 18.00 | 15.00 |
| " $1\frac{7}{16}$ " | 18.00 | 15.00 | 12.50 | 9.50 | 19.00 | 16.00 |
| " $1\frac{1}{2}$ " | 19.00 | 16.00 | 13.00 | 10.00 | 20.00 | 17.00 |
| " $1\frac{9}{16}$ " | 20.50 | 17.50 | 14.00 | 10.50 | 21.50 | 18.50 |
| " $1\frac{5}{8}$ " | 22.00 | 19.00 | 15.00 | 11.00 | 23.00 | 20.00 |
| " $1\frac{11}{16}$ " | 23.50 | 20.00 | 16.00 | 12.00 | 24.50 | 21.00 |
| " $1\frac{3}{4}$ " | 25.00 | 21.00 | 17.00 | 13.00 | 26.00 | 22.00 |
| " $1\frac{7}{8}$ " | 28.00 | 24.00 | 20.00 | 15.00 | 29.00 | 25.00 |
| " 2 " | 30.00 | 26.00 | 22.00 | 18.00 | 31.00 | 27.00 |
| " $2\frac{1}{4}$ " | 33.00 | 29.00 | 25.00 | 21.00 | 34.00 | 30.00 |
| " $2\frac{1}{2}$ " | 38.00 | 33.00 | 29.00 | 25.00 | | |
| " $2\frac{3}{4}$ " | 42.00 | 36.00 | 32.00 | | | |
| " 3 " | 46.00 | 40.00 | 36.00 | | | |
| " $3\frac{1}{4}$ " | 52.00 | 46.00 | 42.00 | | | |

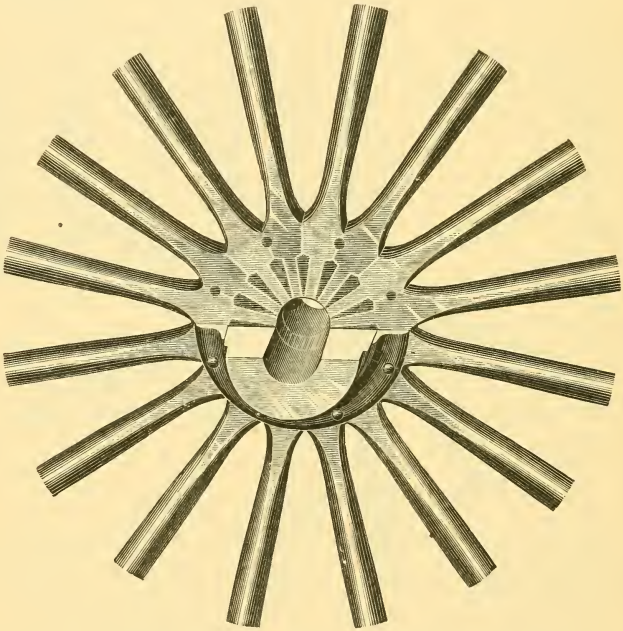
Of Sharp Edge Wheels we make *only the two qualities above quoted.*

# Sulky Wheels—Best.

| Spokes not exceeding 1⅛ inches in width. | Usual Styles. | Warner Patent and Kenney Patent. | Sarven Patent. |
|---|---|---|---|
| 4 feet 6 inches high, per pair, . | $ 9.50 | $10.00 | $10.50 |
| 4 " 7 " " . | 10.50 | 11.00 | 11.50 |
| 4 " 8 " " . | 11.50 | 12.00 | 12.50 |
| 4 " 9 " " . | 12.50 | 13.00 | 13.50 |
| 4 " 10 " " . | 13.50 | 14.00 | 14.50 |
| 4 " 11 " " . | 14.50 | 15.00 | 15.50 |
| 5 " " " . | 15.50 | 16.00 | 16.50 |

Second quality Sulky Wheels cost $2.00 per pair less than prices quoted above. We make but two qualities of Sulky Wheels.

Size of Spokes in above lists is taken as basis of price. Other sizes should be in proportion, otherwise the wheels will be liable to an extra charge.



Section showing interior of genuine "Sarven" Patent Wheel.

Sarven Patent Wheels at $17.00, $14.00, $11.50, and $9.00 per set.

*B*—Is the square bed of axle, conforming in shape and size to the common axle.

*A*—Is the neck, its diameter equal to the cornerwise thickness of the bed.

*O*—Is the arm or bearing; its diameter being considerably greater than the neck.

*C*—Is collar or sand band, of malleable iron, forced upon the neck. Entering between back end of hub and box, as shown, it helps to form the annular recesses "*M* and *N*" to fill with spent grease and exclude sand, grit, etc.

*D*—Is axle box of best quality gray iron. It is without taper inside and outside and is forced into the malleable iron hub. This box has a flange "*e*" cast solid inside near its front end and the leather washers "*f* and *g*" on either side cushion the end of the axle arm and the flange "*d*" of the nut in either direction.

*H*—Is axle nut of malleable iron, hollow as shown, and screwed into the hollow end of axle arm.

*I*—Is malleable iron cap screwing on end of box, preventing loss of axle nut or escape of lubricant and excluding all dirt or grit.

*G*—Is supply of grease filling hollow of arm. By removing cap *I*, insert key through "*j*" in the nut into socket in piston "*P*" and turning forward the grease is expelled through "*h*" and along groove in top of arm to the bearing. To use oil remove the piston "*P*" entirely, clean out all grease from the chamber and holes in *top and bottom*, put on the wheel screw in the nut and with ordinary oiler inject the oil through "*j*" in nut whence it will run to the bearing. In using oil the leather washers "*f* and *g*" should be thick enough to prevent end play but not bind. In using grease the washer or packing shown in the sand collar may be omitted or not, and washers "*f* and *g*" should be free enough to allow a little end play.

These axles are made right and left the same as others. The wheels are not, but the caps on front end of hubs are all threaded right hand. Otherwise all corresponding parts in each size are made interchangeable.

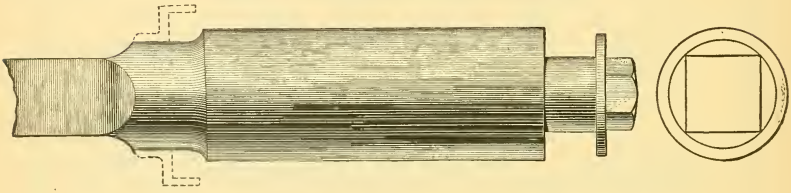
We prefer and advise but little dish in our wheels. Our spokes are driven quite firm and will not draw much in tiring, so do not "draught" the rim too much. Set the axle with very little if any front gather, as the arm is straight. Set the bottom of arms so as to give "plumb spoke" as in other wheels. Do not heat the axles near the collars—give the set in the center. When ready to grease screw out the piston *P*, carefully clean the same and the grease chamber to get all sand and grit out of the threads; also the collar, the hub and all parts. Now fill the chamber *full* of grease, screw in the piston 1 inch to 1¼ inch from the end, far enough to let the axle nut be screwed well home. Put on wheel, screw in the nut securely, insert the key through *j* and turn *forward* three or four revolutions, spinning the wheel at same time.

It is important to see that the foregoing instructions are complied with. Watch the running carefully the first few days or week, then turn out a little fresh grease upon the arm, after which every two to four weeks will be often enough to turn out more. Too much will show at the collar. A little care and experience will be your best guides in this.

Getting started off all right will be a great saving in the future and afford much satisfaction in all respects.

# American Axle and Wheel Company's Patent Axle and Wheel.

NEW STYLE.



OLD STYLE.

The cuts above accurately represent this axle in contrast with one of the ordinary style and of the same size of bed.

The relative size and strength is clearly and fairly shown. This axle *bed* is in all cases the same size and shape as in the common axle, but there all similarity ceases.

In the common style the *arm*, at the collar, where it usually breaks, contains only three-fourths of the metal (76 per cent.) which is in the square of the bed, and at this point it is relatively weaker because of being cut down at a right angle, from which form, the pounding of the wheel causes the metal to crystallize and break, while this axle, beginning some distance back from the arm or bearing, enlarges to a neck with a diameter equal to the cornerwise thickness of the bed, and this neck always and *necessarily* contains *double* the metal, and consequently *more than double the strength* of the common axle-arm, and being made without a square cut shoulder it will never crystallize or break.

# American Axle and Wheel Company's Patent Axle and Wheel.

## PRICE LIST.

N. B.—Only one "Grade" of Goods Made.

| List No. | AXLES. | | WHEELS. | | | Price per Set. |
|---|---|---|---|---|---|---|
| | Size of Bed. | Diam. of Arm. | Pattern No. of Hub. | No. Spokes in Hub. | Size of Spokes. | |
| 1 | $\frac{3}{4}$ | $1\frac{1}{4}$ | 10 | 14 | $\frac{3}{4}$ | $50.00 |
| | | | 19 | 16 | $\frac{3}{4}$ | 50.00 |
| 2 | $\frac{7}{8}$ | $1\frac{1}{2}$ | 20 | 14 | $\frac{7}{8}$ | 50.00 |
| | | | 29 | 16 | $\frac{7}{8}$ | 50.00 |
| 3 | 1 | $1\frac{3}{4}$ | 30 | 14 | 1 | 50.00 |
| | | | 39 | 16 | 1 | 50.00 |
| 4 | $1\frac{1}{8}$ | $1\frac{3}{4}$ | 40 | 14 | $1\frac{1}{8}$ | 50.00 |
| | | | 49 | 16 | $1\frac{1}{8}$ | 50.00 |
| 5 | $1\frac{1}{4}$ | $2\frac{1}{4}$ | 50 | 14 | $1\frac{1}{4}$ | 55.00 |
| | | | 59 | 16 | $1\frac{1}{4}$ | 55.00 |
| 6 | $1\frac{3}{8}$ | $2\frac{1}{4}$ | 60 | 14 | $1\frac{3}{8}$ | 60.00 |
| | | | 69 | 16 | $1\frac{3}{8}$ | 60.00 |
| 7 | $1\frac{1}{2}$ | $2\frac{1}{2}$ | 70 | 14 | $1\frac{1}{2}$ | 65.00 |
| | | | 79 | 16 | $1\frac{1}{2}$ | 65.00 |
| 8 | $1\frac{5}{8}$ | $2\frac{3}{4}$ | 80 | 14 | $1\frac{5}{8}$ | 70.00 |
| | | | 89 | 16 | $1\frac{5}{8}$ | 70.00 |
| 9 | $1\frac{3}{4}$ | 3 | 90 | 14 | $1\frac{3}{4}$ | 80.00 |
| | | | 99 | 16 | $1\frac{3}{4}$ | 80.00 |
| 10 | $1\frac{7}{8}$ | 3 | 100 | 14 | $1\frac{7}{8}$ | 90.00 |
| | | | 109 | 16 | $1\frac{7}{8}$ | 90.00 |
| 11 | 2 | $3\frac{1}{4}$ | 110 | 14 | 2 | 100.00 |
| | | | 119 | 16 | 2 | 100.00 |
| 12 | $2\frac{1}{4}$ | $3\frac{1}{2}$ | 120 | 14 | $2\frac{1}{4}$ | 110.00 |
| | | | 129 | 16 | $2\frac{1}{4}$ | 110.00 |
| 13 | $2\frac{1}{2}$ | $3\frac{3}{4}$ | 130 | 14 | $2\frac{1}{2}$ | 120.00 |
| | | | 139 | 16 | $2\frac{1}{2}$ | 120.00 |
| 14 | $2\frac{3}{4}$ | 4 | 140 | 14 | $2\frac{3}{4}$ | 135.00 |
| | | | 149 | 16 | $2\frac{3}{4}$ | 135.00 |
| 15 | 3 | $4\frac{1}{4}$ | 150 | 14 | 3 | 150.00 |
| | | | 159 | 16 | 3 | 150.00 |

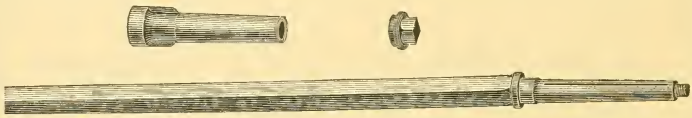
N. B.—No extra charge for Coach Bed Axles.

N. B.—No Banding, Boring or Boxing is required. Wheels are ready for use, except Tiring.

N. B.—No extra charge for Wrenches, Washers or Lubricator.

N. B.—For extra-height wheels, for extra-sized rims, and for screws or rivets in rims, the customary extra charge is made.

N. B.—Spokes for re-filling, finished ready to drive, may be ordered by "Pattern No. of Hub."



# Swelled Half Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Short Bed, . . . | $4.25 | 4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 |
| 28 | Long Bed, . . . | 5.25 | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| $15\frac{1}{2}$ | Short Bed, . . . | $4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 | 16.25 |
| $8\frac{1}{2}$ | Long Bed, . . . | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 | 20.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

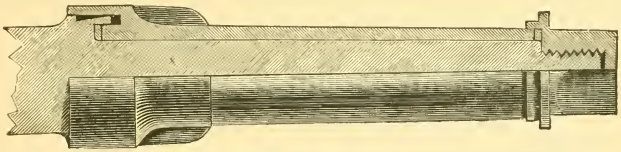
| No. | Swelled, Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Short Bed, . . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 8 | Long Bed, . . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents: $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Second Quality Iron Solid Collar Axles.

| No. | Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 Plain, $13\frac{1}{2}$ Swelled, | Short Bed, . | $2.75 | 3.25 | 4.00 | 5.25 | 6.75 | 8.75 | 11.00 | 13.50 | 17.00 |
| 6 Plain, $6\frac{1}{2}$ Swelled, | Long Bed, . | 3.50 | 4.13 | 5.13 | 6.75 | 8.50 | 10.75 | 13.25 | 16.25 | 20.50 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12 additional.
Coach Beds, to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents per set additional.



MILLER'S PATENT AXLE.

## PRICES OF

# Miller's Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 41 | Short Bed, . . . | $4.50 | 4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 |
| 42 | Long Bed, . . . | 5.50 | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 43 | Short Bed, . . . | $4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 | 16.50 |
| 44 | Long Bed, . . . | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 | 20.50 |
| | Wrought Iron Case-Hardened Boxes extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

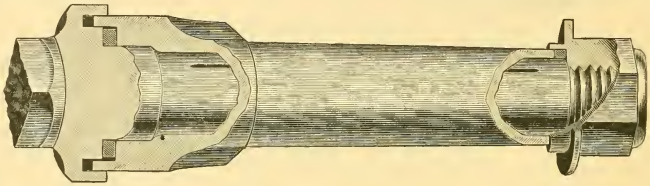
Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 45 | Short Bed, . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 46 | Long Bed, . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds, $\frac{3}{4}$ to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

# Half Patent Collinge Collar Axles.



**Bessemer Steel Solid Collar.**

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 71 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 72 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

**Best Quality Steel Converted Iron Solid Collar.**

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 73 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 74 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

# Steele's Patent Sand Box Axles.

(See cuts on page 24).

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

Coach Beds to 1¼ inch, 30 cents; 1¼ inch and larger, 60 cents per set, extra.

**Bessemer Steel.**

| No. | | ⅝ to ¾ | ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Short Beds, . . | $4.25 | 4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 |
| 3 | Long Beds, . . | 5.00 | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 |

**Best Quality Steel Converted Iron, Solid Collar.**

| No. | | ¾ to ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Short Beds, . . | $4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 | 17.00 |
| 2 | Long Beds, . . | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 | 19.75 |

**Second Quality Iron, Solid Collar.**

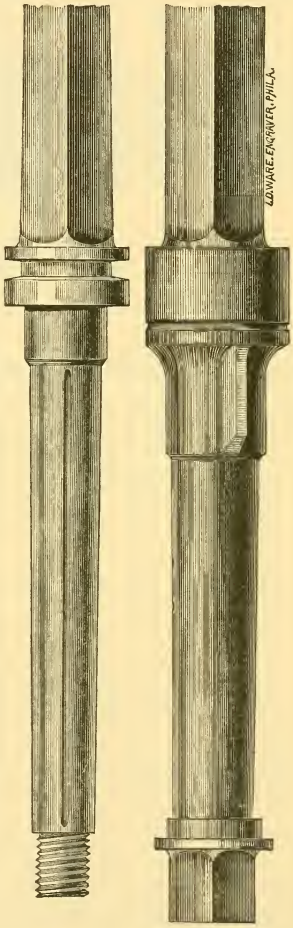
| No. | | ¾ to 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ | 2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Short Beds, . . | $3.00 | 3.50 | 4.25 | 5.88 | 7.38 | 9.25 | 11.38 | 14.00 |
| 1 | Long Beds, . . | 3.75 | 4.38 | 5.50 | 7.25 | 9.00 | 11.13 | 13.50 | 17.00 |

Add to List Price for Case-Hardening, ¾ to 1⅜, 60 cents; 1⅜ and larger, $1.12; Steel Converting, ¾ to 1⅜, $1.12; 1⅜ and larger, $2.20.

---

**Common, Concord, Miller's Patent Oil Nut, Steele's Patent Oil Nut, Full and Half Collinge, Half Patent Collinge Collar, Killam Patent Spring Washer, Stiver's Long Swell Miller Patent and other styles of Axles furnished when desired.**

# Steele's Patent Sand Box Axles.



ANNULLING ALL PREVIOUS LISTS.

EDWARD E. BRADLEY, President. ERASTUS A. DOOLITTLE, Secretary.

# PRICE LIST

No. 44.

# New Haven Wheel Co.

MANUFACTURERS OF

## VEHICLE WHEELS.

*Usual Styles, English Sharp Edge,*

*Sarven Patent, Warner Patent,*

*Patent Banded Hub*

*and Fire Department Wheels,*

— ALSO —

*American Axle and Wheel Co's Patent Axle and Wheel.*

NEW HAVEN, CONN., U. S. A.

1889.

SECOND GROWTH

# EASTERN TIMBER

*A Specialty in our Manufactures.*

DEALERS IN

## Miller's Patent, Steele's Patent, Half Patent and other Axles.

*WHEELS OF ALL SIZES TIRED*

—AND—

Axle Boxes accurately set in Hubs whenever desired.

---

## CONTENTS.


| | Page. |
|---|---|
| Usual Styles Wheels, | 7 |
| Sulky Wheels, | 7 |
| Sarven Patent Wheels, | 9 |
| Warner Patent Wheels, | 11 |
| Kenney Patent Banded Hub Wheels, | 12 |
| Patent Back Bands for Hubs, | 13 |
| Spokes, Rims and Hubs, | 14 |
| Ironing (Tiring, Boxing, etc.), | 15 |
| American Axle and Wheel Co.'s Patent Axle and Wheel, | 16–19 |
| Axles (Half Patent), | 20 |
| Axles (Miller's Patent), | 21 |
| Axles, Half Patent Collinge Collar, | 22 |
| Axles (Steele's Patent), | 23 |


TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

ESTABLISHED 1845.

# New Haven Wheel Company.

*TO OUR PATRONS:*

We take pleasure in presenting the trade with our 1889 Price List herewith and trust it will be found entirely satisfactory.

No changes to speak of have been made in the prices of goods heretofore quoted. A few more sizes of wheels have been added this year, also a new axle and wheel which are mentioned more particularly below. We never felt better prepared to serve our customers in every department of our business than at present.

It will be our constant and utmost endeavor in the future, as in the past, to give our customers perfect satisfaction; and the added improvements which the experience of nearly forty-five years in the business has suggested, give us faith to believe that our success in so doing is beyond experiment.

We have now on hand a very large stock of *seasoned second growth Hickory and White Oak*, and with the best modern machinery and long experience in the business feel that we are enabled to furnish the *best wheels made for the prices charged.* We challenge a comparison, at equal cost, with any and all other makes of wheels, for *style*, *durability* and *strength.*

We desire to call particular attention to our light wheels. They are all made of pure second growth Hickory spokes and rims and Elm hubs, carefully seasoned and put together, nicely finished and the prices for them will be found very reasonable.

It seems hardly necessary for us to especially notice our unpatented styles of Wheels, which include English, and Common styles, they being so thoroughly well known already. A steadily increasing trade from 1845 down to the present time attests the care we take with them, and their consequent value. It is our intention, and will be our constant endeavor in the future, to *excel* in these lines of work. We make but two qualities ("Extra" and "No. 1") of Wheels having Sharp Edged (English Style) Spokes. Of the usual styles Wood Hub Wheels, we make *four* qualities, viz: Extra, No. 1, No. 2, and No. 3.

We have very desirable Spoke Patterns, etc., for light wheels for road wagons and other light driving vehicles. We ask a special trial for these, believing them to be the most stylish and durable wheels of the kind made.

We make four grades of the light sizes of the genuine "Sarven" Wheel, designated A, B, C and D respectively.

We shall continue to pay special attention to the *first class* (A) Sarven Wheel, which has been adjudged by the public, after more than thirty years' use, the BEST PATENT WHEEL MADE. The lower grades are made in order to supply the constant demand for good durable wheels at moderate prices. As such we confidently recommend them.

We also make four qualities of the Warner Patent Wheel, designated XXXX, XXX, XX and X respectively. This wheel has now been before the trade for some twenty years, and has been accepted and approved on its merits. It is a favorite wheel, very reliable, and its use is quite widely extended.

Of the Kenney Patent Banded Hub Wheels we also make four qualities of the light sizes, designated XXXX, XXX, XX and X respectively. This excellent wheel has been thoroughly tried, is very popular and continues to grow in public favor.

During the past four years we have manufactured the wheels sold by the American Axle and Wheel Company of New York, and through this experience have carefully observed the growth and character of their trade. The great merit both in their axle and wheel, as well as their superior lubricating device, have led us to arrange with that company to offer their goods to our trade, which we do in this issue. They make but one grade of these goods, and that strictly the best.

For the purpose of meeting a demand both at home and abroad, and especially in those places where properly skilled labor, pertaining to this branch of business, is not readily attainable, we some years ago added to our wheel business the tiring, boxing and banding of wheels; also the furnishing of axles. Our customers are thereby enabled to procure their wheels simply finished in the wood, or to procure them tired, or tired, banded and boxed, and with any usual style or make of axles they desire. This department is greatly appreciated by many of our customers, who use it frequently and find it of great convenience and advantage.

We ask a fair trial for all our work. Thanking our many friends and customers for generous favors in the past and trusting to receive and merit such in the future, we remain, with great respect,

NEW HAVEN WHEEL CO.

NEW HAVEN, CONN., U. S. A.
JANUARY 1ST, 1889.

N. B.—The price of Screwing or Riveting rims of all styles of wheels is given on page 7, and is governed always by the *width of tread.*

Be particular to give all dimensions possible when ordering wheels, as all omissions will be supplied by us, and customers must take the risk of their being right.

No wheels warranted unless length of tenon is greater than width of spoke at shoulder after hubs are cut out for axle boxes.

Printed blanks or blank books for ordering wheels furnished on application.

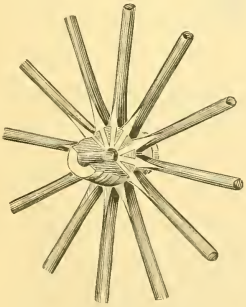
## MAXIMUM SIZES.

If height of wheels (all styles) exceeds 4 feet front and 4 feet 8 inches back, on sets, or 4 feet 4 inches on pairs, they will be subject to an additional charge of 50 cents per inch per wheel for all such excess.

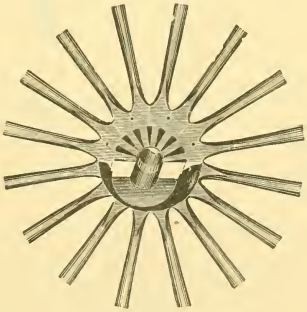
If width of tread exceeds width of spokes at hub an extra charge may be made.

If *Depth of Rims* exceeds the following an extra charge may be made.

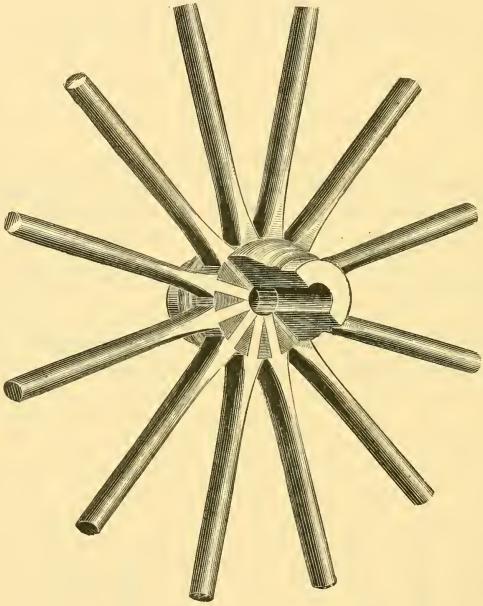
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $\frac{3}{4}$ to $1\frac{1}{4}$ in. | spoke-wheels | inclusive, | not more | than | $\frac{1}{4}$ in. | deeper | than spoke | is wide |
| $1\frac{3}{8}$ to $1\frac{5}{8}$ | " | " | " | " | $\frac{3}{8}$ " | " | " |
| $1\frac{3}{4}$ to $2\frac{1}{4}$ | " | " | " | " | $\frac{1}{2}$ " | " | " |
| $2\frac{3}{8}$ to 3 | " | " | " | " | $\frac{5}{8}$ " | " | " |



Common or usual Style Wood Hub Wheel.



"Sarven" Patent Wheel.



Section showing Usual Style Wood Hub Wheel.

Usual (New York) Style Wheels at $15,00, $12.00, $9.50, and $7.00 per set.

# Not Patented Wheels.

Be particular to give quality, also height and all other dimensions possible.

| Per Set. | Usual Style Wood Hub Wheels. | | | | Sharp Edge Spokes, English Style. | |
|---|---|---|---|---|---|---|
| | Extra. | No. 1. | No. 2. | No. 3. | Extra. | No. 1. |
| With $1\frac{1}{8}$ in. Spokes and under. | $15.00 | $12.00 | $ 9.50 | $ 7.00 | $16.00 | $13.00 |
| " $1\frac{3}{16}$ and $1\frac{1}{4}$ in. Spokes. | 16.00 | 13.00 | 10.00 | 8.00 | 17.00 | 14.00 |
| " $1\frac{5}{16}$ " | 16.50 | 13.50 | 11.00 | 8.50 | 17.50 | 14.50 |
| " $1\frac{3}{8}$ " | 17.00 | 14.00 | 12.00 | 9.00 | 18.00 | 15.00 |
| " $1\frac{7}{16}$ " | 18.00 | 15.00 | 12.50 | 9.50 | 19.00 | 16.00 |
| " $1\frac{1}{2}$ " | 19.00 | 16.00 | 13.00 | 10.00 | 20.00 | 17.00 |
| " $1\frac{9}{16}$ " | 20.50 | 17.50 | 14.00 | 10.50 | 21.50 | 18.50 |
| " $1\frac{5}{8}$ " | 22.00 | 19.00 | 15.00 | 11.00 | 23.00 | 20.00 |
| " $1\frac{11}{16}$ " | 23.50 | 20.00 | 16.00 | 12.00 | 24.50 | 21.00 |
| " $1\frac{3}{4}$ " | 25.00 | 21.00 | 17.00 | 13.00 | 26.00 | 22.00 |
| " $1\frac{7}{8}$ " | 28.00 | 24.00 | 20.00 | 15.00 | 29.00 | 25.00 |
| " 2 " | 30.00 | 26.00 | 22.00 | 18.00 | 31.00 | 27.00 |
| " $2\frac{1}{4}$ " | 33.00 | 29.00 | 25.00 | 21.00 | 34.00 | 30.00 |
| " $2\frac{1}{2}$ " | 38.00 | 33.00 | 29.00 | 25.00 | | |
| " $2\frac{3}{4}$ " | 42.00 | 36.00 | 32.00 | | | |
| " 3 " | 46.00 | 40.00 | 36.00 | | | |
| " $3\frac{1}{4}$ " | 52.00 | 46.00 | 42.00 | | | |

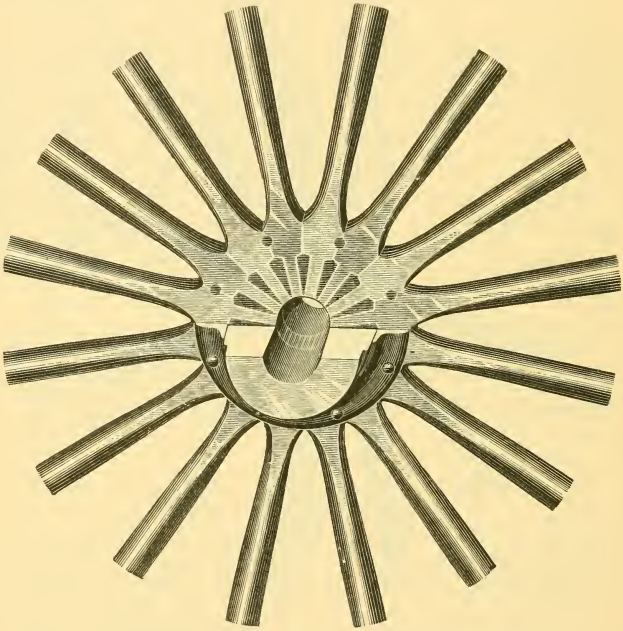
Of Sharp Edge Wheels we make *only the two qualities above quoted.*

# Sulky Wheels—Best.

| Spokes not exceeding $1\frac{1}{8}$ inches in width. | Usual Styles. | Warner Patent and Kenney Patent. | Sarven Patent. |
|---|---|---|---|
| 4 feet 6 inches high, per pair, . | $ 9.50 | $10.00 | $10.50 |
| 4 " 7 " " . | 10.50 | 11.00 | 11.50 |
| 4 " 8 " " . | 11.50 | 12.00 | 12.50 |
| 4 " 9 " " . | 12.50 | 13.00 | 13.50 |
| 4 " 10 " " . | 13.50 | 14.00 | 14.50 |
| 4 " 11 " " . | 14.50 | 15.00 | 15.50 |
| 5 " " " . | 15.50 | 16.00 | 16.50 |

Second quality Sulky Wheels cost $2.00 per pair less than prices quoted above. We make but two qualities of Sulky Wheels.

Size of Spokes in above lists is taken as basis of price. Other sizes should be in proportion, otherwise the wheels will be liable to an extra charge.



Section showing interior of genuine "Sarven" Patent Wheel.

Sarven Patent Wheels at $17.00, $14.00, $11.50, and $9.00 per set.

***B***—Is the square bed of axle, conforming in shape and size to the common axle.

***A***—Is the neck, its diameter equal to the cornerwise thickness of the bed.

***O***—Is the arm or bearing; its diameter being considerably greater than the neck.

***C***—Is collar or sand band, of malleable iron, forced upon the neck. Entering between back end of hub and box, as shown, it helps to form the annular recesses "*M* and *N*" to fill with spent grease and exclude sand, grit, etc.

***D***—Is axle box of best quality gray iron. It is without taper inside and outside and is forced into the malleable iron hub. This box has a flange "*e*" cast solid inside near its front end and the leather washers "*f* and *g*" on either side cushion the end of the axle arm and the flange "*d*" of the nut in either direction.

***H***—Is axle nut of malleable iron, hollow as shown, and screwed into the hollow end of axle arm.

***I***—Is malleable iron cap screwing on end of box, preventing loss of axle nut or escape of lubricant and excluding all dirt or grit.

***G***—Is supply of grease filling hollow of arm. By removing cap *I*, insert key through "*j*" in the nut into socket in piston "*P*" and turning forward the grease is expelled through "*h*" and along groove in top of arm to the bearing. To use oil remove the piston "*P*" entirely, clean out all grease from the chamber and holes in *top and bottom*, put on the wheel screw in the nut and with ordinary oiler inject the oil through "*j*" in nut whence it will run to the bearing. In using oil the leather washers "*f* and *g*" should be thick enough to prevent end play but not bind. In using grease the washer or packing shown in the sand collar may be omitted or not, and washers "*f* and *g*" should be free enough to allow a little end play.

These axles are made right and left the same as others. The wheels are not, but the caps on front end of hubs are all threaded right hand. Otherwise all corresponding parts in each size are made interchangeable.

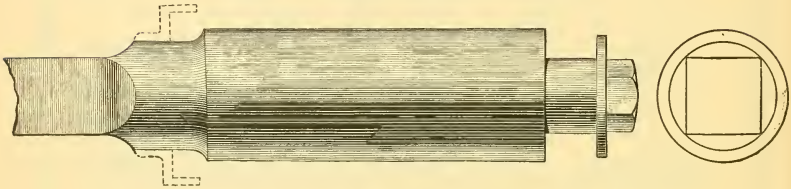
We prefer and advise but little dish in our wheels. Our spokes are driven quite firm and will not draw much in tiring, so do not "draught" the rim too much. Set the axle with very little if any front gather, as the arm is straight. Set the bottom of arms so as to give "plumb spoke" as in other wheels. Do not heat the axles near the collars—give the set in the center. When ready to grease screw out the piston *P*, carefully clean the same and the grease chamber to get all sand and grit out of the threads; also the collar, the hub and all parts. Now fill the chamber *full* of grease, screw in the piston 1 inch to 1¼ inch from the end, far enough to let the axle nut be screwed well home. Put on wheel, screw in the nut securely, insert the key through *j* and turn *forward* three or four revolutions, spinning the wheel at same time.

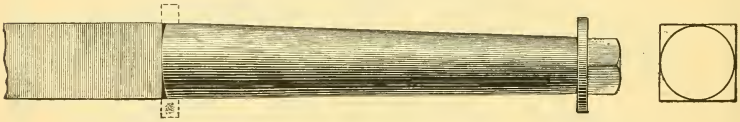
It is important to see that the foregoing instructions are complied with. Watch the running carefully the first few days or week, then turn out a little fresh grease upon the arm, after which every two to four weeks will be often enough to turn out more. Too much will show at the collar. A little care and experience will be your best guides in this.

Getting started off all right will be a great saving in the future and afford much satisfaction in all respects.

# American Axle and Wheel Company's Patent Axle and Wheel.

NEW STYLE.





OLD STYLE.

The cuts above accurately represent this axle in contrast with one of the ordinary style and of the same size of bed.

The relative size and strength is clearly and fairly shown. This axle *bed* is in all cases the same size and shape as in the common axle, but there all similarity ceases.

In the common style the *arm*, at the collar, where it usually breaks, contains only three-fourths of the metal (76 per cent.) which is in the square of the bed, and at this point it is relatively weaker because of being cut down at a right angle, from which form, the pounding of the wheel causes the metal to crystallize and break, while this axle, beginning some distance back from the arm or bearing, enlarges to a neck with a diameter equal to the cornerwise thickness of the bed, and this neck always and *necessarily* contains *double* the metal, and consequently *more than double the strength* of the common axle-arm, and being made without a square cut shoulder it will never crystallize or break.

# American Axle and Wheel Company's Patent Axle and Wheel.

## PRICE LIST.

N. B.—Only one "Grade" of Goods Made.

| List No. | AXLES. | | WHEELS. | | | Price per Set. |
|---|---|---|---|---|---|---|
| | Size of Bed. | Diam. of Arm. | Pattern No. of Hub. | No. Spokes in Hub. | Size of Spokes. | |
| 1 | $\frac{3}{4}$ | $1\frac{1}{4}$ | 10 | 14 | $\frac{3}{4}$ | $50.00 |
| | | | 19 | 16 | $\frac{3}{4}$ | 50.00 |
| 2 | $\frac{7}{8}$ | $1\frac{1}{2}$ | 20 | 14 | $\frac{7}{8}$ | 50.00 |
| | | | 29 | 16 | $\frac{7}{8}$ | 50.00 |
| 3 | 1 | $1\frac{3}{4}$ | 30 | 14 | 1 | 50.00 |
| | | | 39 | 16 | 1 | 50.00 |
| 4 | $1\frac{1}{8}$ | $1\frac{3}{4}$ | 40 | 14 | $1\frac{1}{8}$ | 50.00 |
| | | | 49 | 16 | $1\frac{1}{8}$ | 50.00 |
| 5 | $1\frac{1}{4}$ | $2\frac{1}{4}$ | 50 | 14 | $1\frac{1}{4}$ | 55.00 |
| | | | 59 | 16 | $1\frac{1}{4}$ | 55.00 |
| 6 | $1\frac{3}{8}$ | $2\frac{1}{4}$ | 60 | 14 | $1\frac{3}{8}$ | 60.00 |
| | | | 69 | 16 | $1\frac{3}{8}$ | 60.00 |
| 7 | $1\frac{1}{2}$ | $2\frac{1}{2}$ | 70 | 14 | $1\frac{1}{2}$ | 65.00 |
| | | | 79 | 16 | $1\frac{1}{2}$ | 65.00 |
| 8 | $1\frac{5}{8}$ | $2\frac{3}{4}$ | 80 | 14 | $1\frac{5}{8}$ | 70.00 |
| | | | 89 | 16 | $1\frac{5}{8}$ | 70.00 |
| 9 | $1\frac{3}{4}$ | 3 | 90 | 14 | $1\frac{3}{4}$ | 80.00 |
| | | | 99 | 16 | $1\frac{3}{4}$ | 80.00 |
| 10 | $1\frac{7}{8}$ | 3 | 100 | 14 | $1\frac{7}{8}$ | 90.00 |
| | | | 109 | 16 | $1\frac{7}{8}$ | 90.00 |
| 11 | 2 | $3\frac{1}{4}$ | 110 | 14 | 2 | 100.00 |
| | | | 119 | 16 | 2 | 100.00 |
| 12 | $2\frac{1}{4}$ | $3\frac{1}{2}$ | 120 | 14 | $2\frac{1}{4}$ | 110.00 |
| | | | 129 | 16 | $2\frac{1}{4}$ | 110.00 |
| 13 | $2\frac{1}{2}$ | $3\frac{3}{4}$ | 130 | 14 | $2\frac{1}{2}$ | 120.00 |
| | | | 139 | 16 | $2\frac{1}{2}$ | 120.00 |
| 14 | $2\frac{3}{4}$ | 4 | 140 | 14 | $2\frac{3}{4}$ | 135.00 |
| | | | 149 | 16 | $2\frac{3}{4}$ | 135.00 |
| 15 | 3 | $4\frac{1}{4}$ | 150 | 14 | 3 | 150.00 |
| | | | 159 | 16 | 3 | 150.00 |

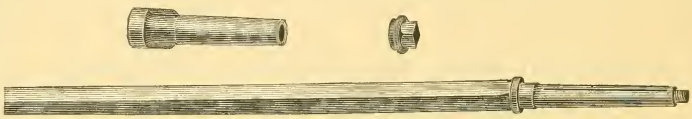
N. B.—No extra charge for Coach Bed Axles.

N. B.—No Banding, Boring or Boxing is required. Wheels are ready for use, except Tiring.

N. B.—No extra charge for Wrenches, Washers or Lubricator.

N. B.—For extra-height wheels, for extra-sized rims, and for screws or rivets in rims, the customary extra charge is made.

N. B.—Spokes for re-filling, finished ready to drive, may be ordered by "Pattern No. of Hub."



# Swelled Half Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Short Bed, . . . | $4.25 | 4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 |
| 28 | Long Bed, . . . | 5.25 | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| $15\frac{1}{2}$ | Short Bed, . . . | $4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 | 16.25 |
| $8\frac{1}{2}$ | Long Bed, . . . | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 | 20.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

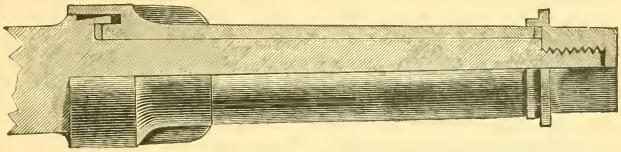
| No. | Swelled, Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Short Bed, . . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 8 | Long Bed, . . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Second Quality Iron Solid Collar Axles.

| No. | Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 Plain, 13⅓ Swelled, | Short Bed, . | $2.75 | 3.25 | 4.00 | 5.25 | 6.75 | 8.75 | 11.00 | 13.50 | 17.00 |
| 6 Plain, 6⅓ Swelled, | Long Bed, . | 3.50 | 4.13 | 5.13 | 6.75 | 8.50 | 10.75 | 13.25 | 16.25 | 20.50 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents: $1\frac{3}{8}$ and larger, $1.12 additional.
Coach Beds, to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents per set additional.



MILLER'S PATENT AXLE.

PRICES OF

# Miller's Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 41 | Short Bed, . . . | $4.50 | 4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 |
| 42 | Long Bed, . . . | 5.50 | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 43 | Short Bed, . . . | $4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 | 16.50 |
| 44 | Long Bed, . . . | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 | 20.50 |
| | Wrought Iron Case-Hardened Boxes extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

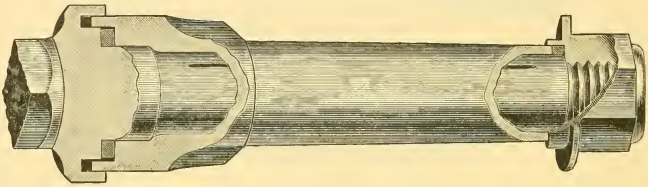
Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 45 | Short Bed, . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 46 | Long Bed, . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds, $\frac{3}{4}$ to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

# Half Patent Collinge Collar Axles.



**Bessemer Steel Solid Collar.**

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 71 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 72 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

**Best Quality Steel Converted Iron Solid Collar.**

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 73 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 74 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

# Steele's Patent Sand Box Axles.

(See cuts on page 24).

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

Coach Beds to 1¼ inch, 30 cents; 1¼ inch and larger, 60 cents per set, extra.

**Bessemer Steel.**

| No. | | ⅝ to ¾ | ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Short Beds, . . | $4.25 | 4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 |
| 3 | Long Beds, . . | 5.00 | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 |

**Best Quality Steel Converted Iron, Solid Collar.**

| No. | | ¾ to ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Short Beds, . . | $4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 | 17.00 |
| 2 | Long Beds, . . | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 | 19.75 |

**Second Quality Iron, Solid Collar.**

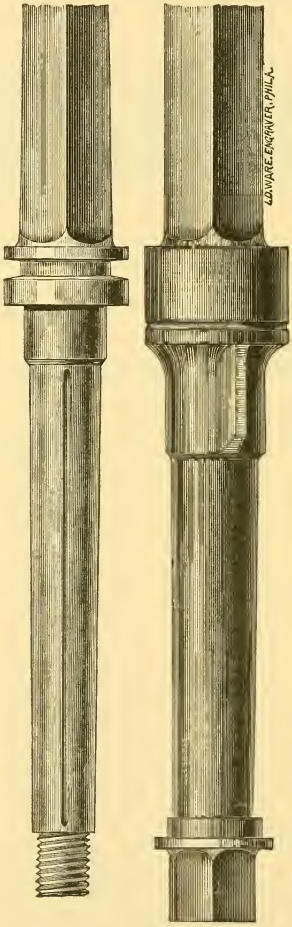
| No. | | ¾ to 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ | 2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Short Beds, . . | $3.00 | 3.50 | 4.25 | 5.88 | 7.38 | 9.25 | 11.38 | 14.00 |
| 1 | Long Beds, . . | 3.75 | 4.38 | 5.50 | 7.25 | 9.00 | 11.13 | 13.50 | 17.00 |

Add to List Price for Case-Hardening, ¾ to 1⅜, 60 cents; 1⅜ and larger, $1.12; Steel Converting, ¾ to 1⅜, $1.12; 1⅜ and larger, $2.20.

---

**Common, Concord, Miller's Patent Oil Nut, Steele's Patent Oil Nut, Full and Half Collinge, Half Patent Collinge Collar, Killam Patent Spring Washer, Stiver's Long Swell Miller Patent and other styles of Axles furnished when desired.**

# Steele's Patent Sand Box Axles.



ANNULLING ALL PREVIOUS LISTS.

EDWARD E. BRADLEY, President. ERASTUS A. DOOLITTLE, Secretary.

# PRICE LIST

No. 44.

# New Haven Wheel Co.

MANUFACTURERS OF

## VEHICLE WHEELS.

*Usual Styles, English Sharp Edge,*

*Sarven Patent, Warner Patent,*

*Patent Banded Hub*

*and Fire Department Wheels,*

— ALSO —

*American Axle and Wheel Co's Patent Axle and Wheel.*

NEW HAVEN, CONN., U. S. A.

1889.

SECOND GROWTH

# EASTERN TIMBER

*A Specialty in our Manufactures.*

DEALERS IN

## Miller's Patent, Steele's Patent, Half Patent and other Axles.

*WHEELS OF ALL SIZES TIRED*

—AND—

Axle Boxes accurately set in Hubs whenever desired.

---

## CONTENTS.


| | PAGE. |
|---|---|
| USUAL STYLES WHEELS, | 7 |
| SULKY WHEELS, | 7 |
| SARVEN PATENT WHEELS, | 9 |
| WARNER PATENT WHEELS, | 11 |
| KENNEY PATENT BANDED HUB WHEELS, | 12 |
| PATENT BACK BANDS FOR HUBS, | 13 |
| SPOKES, RIMS AND HUBS, | 14 |
| IRONING (TIRING, BOXING, ETC.), | 15 |
| AMERICAN AXLE AND WHEEL CO.'S PATENT AXLE AND WHEEL, | 16–19 |
| AXLES (HALF PATENT), | 20 |
| AXLES (MILLER'S PATENT), | 21 |
| AXLES, HALF PATENT COLLINGE COLLAR, | 22 |
| AXLES (STEELE'S PATENT), | 23 |


TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

ESTABLISHED 1845.

# New Haven Wheel Company.

*TO OUR PATRONS:*

We take pleasure in presenting the trade with our 1889 Price List herewith and trust it will be found entirely satisfactory.

No changes to speak of have been made in the prices of goods heretofore quoted. A few more sizes of wheels have been added this year, also a new axle and wheel which are mentioned more particularly below. We never felt better prepared to serve our customers in every department of our business than at present.

It will be our constant and utmost endeavor in the future, as in the past, to give our customers perfect satisfaction; and the added improvements which the experience of nearly forty-five years in the business has suggested, give us faith to believe that our success in so doing is beyond experiment.

We have now on hand a very large stock of *seasoned second growth Hickory and White Oak*, and with the best modern machinery and long experience in the business feel that we are enabled to furnish the *best wheels made for the prices charged.* We challenge a comparison, at equal cost, with any and all other makes of wheels, for *style*, *durability* and *strength.*

We desire to call particular attention to our light wheels. They are all made of pure second growth Hickory spokes and rims and Elm hubs, carefully seasoned and put together, nicely finished and the prices for them will be found very reasonable.

It seems hardly necessary for us to especially notice our unpatented styles of Wheels, which include English, and Common styles, they being so thoroughly well known already. A steadily increasing trade from 1845 down to the present time attests the care we take with them, and their consequent value. It is our intention, and will be our constant endeavor in the future, to *excel* in these lines of work. We make but two qualities ("Extra" and "No. 1") of Wheels having Sharp Edged (English Style) Spokes. Of the usual styles Wood Hub Wheels, we make *four* qualities, viz: Extra, No. 1, No. 2, and No. 3.

We have very desirable Spoke Patterns, etc., for light wheels for road wagons and other light driving vehicles. We ask a special trial for these, believing them to be the most stylish and durable wheels of the kind made.

We make four grades of the light sizes of the genuine "Sarven" Wheel, designated A, B, C and D respectively.

We shall continue to pay special attention to the *first class* (A) Sarven Wheel, which has been adjudged by the public, after more than thirty years' use, the BEST PATENT WHEEL MADE. The lower grades are made in order to supply the constant demand for good durable wheels at moderate prices. As such we confidently recommend them.

We also make four qualities of the Warner Patent Wheel, designated XXXX, XXX, XX and X respectively. This wheel has now been before the trade for some twenty years, and has been accepted and approved on its merits. It is a favorite wheel, very reliable, and its use is quite widely extended.

Of the Kenney Patent Banded Hub Wheels we also make four qualities of the light sizes, designated XXXX, XXX, XX and X respectively. This excellent wheel has been thoroughly tried, is very popular and continues to grow in public favor.

During the past four years we have manufactured the wheels sold by the American Axle and Wheel Company of New York, and through this experience have carefully observed the growth and character of their trade. The great merit both in their axle and wheel, as well as their superior lubricating device, have led us to arrange with that company to offer their goods to our trade, which we do in this issue. They make but one grade of these goods, and that strictly the best.

For the purpose of meeting a demand both at home and abroad, and especially in those places where properly skilled labor, pertaining to this branch of business, is not readily attainable, we some years ago added to our wheel business the tiring, boxing and banding of wheels; also the furnishing of axles. Our customers are thereby enabled to procure their wheels simply finished in the wood, or to procure them tired, or tired, banded and boxed, and with any usual style or make of axles they desire. This department is greatly appreciated by many of our customers, who use it frequently and find it of great convenience and advantage.

We ask a fair trial for all our work. Thanking our many friends and customers for generous favors in the past and trusting to receive and merit such in the future, we remain, with great respect,

NEW HAVEN WHEEL CO.

NEW HAVEN, CONN., U. S. A.
JANUARY 1ST, 1889.

N. B.—The price of Screwing or Riveting rims of all styles of wheels is given on page 7, and is governed always by the *width of tread.*

Be particular to give all dimensions possible when ordering wheels, as all omissions will be supplied by us, and customers must take the risk of their being right.

No wheels warranted unless length of tenon is greater than width of spoke at shoulder after hubs are cut out for axle boxes.

Printed blanks or blank books for ordering wheels furnished on application.

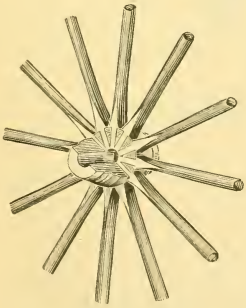
## MAXIMUM SIZES.

If height of wheels (all styles) exceeds 4 feet front and 4 feet 8 inches back, on sets, or 4 feet 4 inches on pairs, they will be subject to an additional charge of 50 cents per inch per wheel for all such excess.

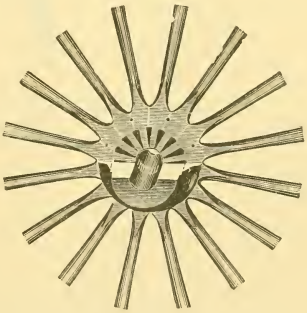
If width of tread exceeds width of spokes at hub an extra charge may be made.

If *Depth of Rims* exceeds the following an extra charge may be made.

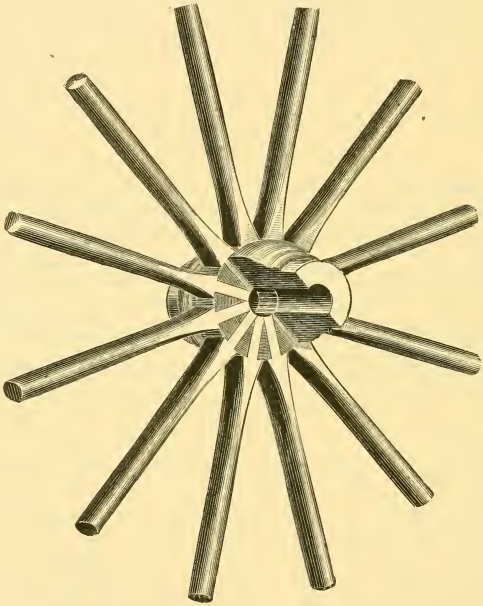
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $\frac{3}{4}$ to $1\frac{1}{4}$ | in. | spoke-wheels | inclusive, | not more | than | $\frac{1}{4}$ | in. | deeper than spoke is wide |
| $1\frac{3}{8}$ to $1\frac{5}{8}$ | " | " | " | " | $\frac{3}{8}$ | " | " | " |
| $1\frac{3}{4}$ to $2\frac{1}{4}$ | " | " | " | " | $\frac{1}{2}$ | " | " | " |
| $2\frac{3}{8}$ to 3 | " | " | " | " | $\frac{5}{8}$ | " | " | " |



Common or usual Style Wood Hub Wheel.



"Sarven" Patent Wheel.



Section showing Usual Style Wood Hub Wheel.

Usual (New York) Style Wheels at $15,00, $12.00, $9.50, and $7.00 per set.

# Not Patented Wheels.

Be particular to give quality, also height and all other dimensions possible.

| Per Set. | Usual Style Wood Hub Wheels. | | | | Sharp Edge Spokes, English Style. | |
|---|---|---|---|---|---|---|
| | Extra. | No. 1. | No. 2. | No. 3. | Extra. | No. 1. |
| With $1\frac{1}{8}$ in. Spokes and under. | $15.00 | $12.00 | $ 9.50 | $ 7.00 | $16.00 | $13.00 |
| " $1\frac{3}{16}$ and $1\frac{1}{4}$ in. Spokes. | 16.00 | 13.00 | 10.00 | 8.00 | 17.00 | 14.00 |
| " $1\frac{5}{16}$ " | 16.50 | 13.50 | 11.00 | 8.50 | 17.50 | 14.50 |
| " $1\frac{3}{8}$ " | 17.00 | 14.00 | 12.00 | 9.00 | 18.00 | 15.00 |
| " $1\frac{7}{16}$ " | 18.00 | 15.00 | 12.50 | 9.50 | 19.00 | 16.00 |
| " $1\frac{1}{2}$ " | 19.00 | 16.00 | 13.00 | 10.00 | 20.00 | 17.00 |
| " $1\frac{9}{16}$ " | 20.50 | 17.50 | 14.00 | 10.50 | 21.50 | 18.50 |
| " $1\frac{5}{8}$ " | 22.00 | 19.00 | 15.00 | 11.00 | 23.00 | 20.00 |
| " $1\frac{11}{16}$ " | 23.50 | 20.00 | 16.00 | 12.00 | 24.50 | 21.00 |
| " $1\frac{3}{4}$ " | 25.00 | 21.00 | 17.00 | 13.00 | 26.00 | 22.00 |
| " $1\frac{7}{8}$ " | 28.00 | 24.00 | 20.00 | 15.00 | 29.00 | 25.00 |
| " 2 " | 30.00 | 26.00 | 22.00 | 18.00 | 31.00 | 27.00 |
| " $2\frac{1}{4}$ " | 33.00 | 29.00 | 25.00 | 21.00 | 34.00 | 30.00 |
| " $2\frac{1}{2}$ " | 38.00 | 33.00 | 29.00 | 25.00 | | |
| " $2\frac{3}{4}$ " | 42.00 | 36.00 | 32.00 | | | |
| " 3 " | 46.00 | 40.00 | 36.00 | | | |
| " $3\frac{1}{4}$ " | 52.00 | 46.00 | 42.00 | | | |

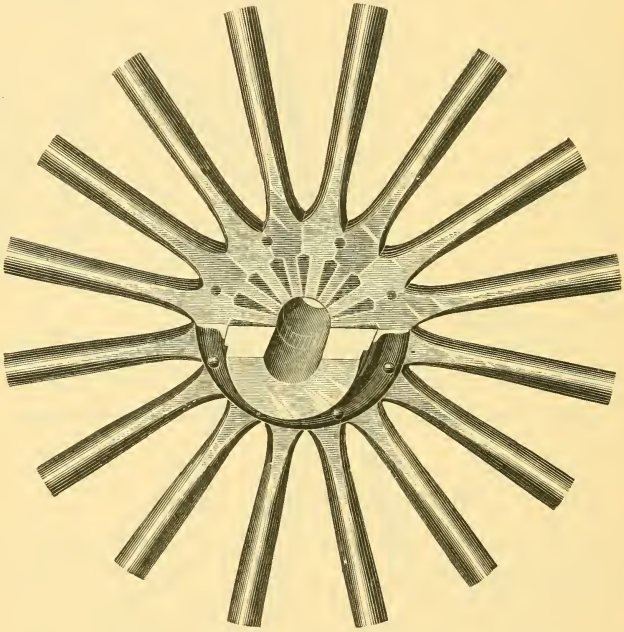
Of Sharp Edge Wheels we make *only the two qualities above quoted.*

# Sulky Wheels—Best.

| Spokes not exceeding $1\frac{1}{8}$ inches in width. | Usual Styles. | Warner Patent and Kenney Patent. | Sarven Patent. |
|---|---|---|---|
| 4 feet 6 inches high, per pair, . | $ 9.50 | $10.00 | $10.50 |
| 4 " 7 " " . | 10.50 | 11.00 | 11.50 |
| 4 " 8 " " . | 11.50 | 12.00 | 12.50 |
| 4 " 9 " " . | 12.50 | 13.00 | 13.50 |
| 4 " 10 " " . | 13.50 | 14.00 | 14.50 |
| 4 " 11 " " . | 14.50 | 15.00 | 15.50 |
| 5 " " " . | 15.50 | 16.00 | 16.50 |

Second quality Sulky Wheels cost $2.00 per pair less than prices quoted above. We make but two qualities of Sulky Wheels.

Size of Spokes in above lists is taken as basis of price. Other sizes should be in proportion, otherwise the wheels will be liable to an extra charge.



Section showing interior of genuine "Sarven" Patent Wheel.

Sarven Patent Wheels at $17.00, $14.00, $11.50, and $9.00 per set.

***B***—Is the square bed of axle, conforming in shape and size to the common axle.

***A***—Is the neck, its diameter equal to the cornerwise thickness of the bed.

***O***—Is the arm or bearing; its diameter being considerably greater than the neck.

***C***—Is collar or sand band, of malleable iron, forced upon the neck. Entering between back end of hub and box, as shown, it helps to form the annular recesses "*M* and *N*" to fill with spent grease and exclude sand, grit, etc.

***D***—Is axle box of best quality gray iron. It is without taper inside and outside and is forced into the malleable iron hub. This box has a flange "*e*" cast solid inside near its front end and the leather washers "*f* and *g*" on either side cushion the end of the axle arm and the flange "*d*" of the nut in either direction.

***H***—Is axle nut of malleable iron, hollow as shown, and screwed into the hollow end of axle arm.

***I***—Is malleable iron cap screwing on end of box, preventing loss of axle nut or escape of lubricant and excluding all dirt or grit.

***G***—Is supply of grease filling hollow of arm. By removing cap *I*, insert key through "*j*" in the nut into socket in piston "*P*" and turning forward the grease is expelled through "*h*" and along groove in top of arm to the bearing. To use oil remove the piston "*P*" entirely, clean out all grease from the chamber and holes in *top and bottom*, put on the wheel screw in the nut and with ordinary oiler inject the oil through "*j*" in nut whence it will run to the bearing. In using oil the leather washers "*f* and *g*" should be thick enough to prevent end play but not bind. In using grease the washer or packing shown in the sand collar may be omitted or not, and washers "*f* and *g*" should be free enough to allow a little end play.

These axles are made right and left the same as others. The wheels are not, but the caps on front end of hubs are all threaded right hand. Otherwise all corresponding parts in each size are made interchangeable.

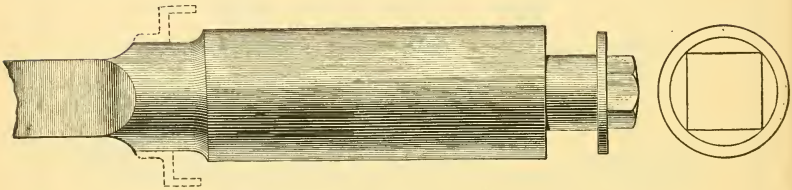
We prefer and advise but little dish in our wheels. Our spokes are driven quite firm and will not draw much in tiring, so do not "draught" the rim too much. Set the axle with very little if any front gather, as the arm is straight. Set the bottom of arms so as to give "plumb spoke" as in other wheels. Do not heat the axles near the collars—give the set in the center. When ready to grease screw out the piston *P*, carefully clean the same and the grease chamber to get all sand and grit out of the threads; also the collar, the hub and all parts. Now fill the chamber *full* of grease, screw in the piston 1 inch to 1¼ inch from the end, far enough to let the axle nut be screwed well home. Put on wheel, screw in the nut securely, insert the key through *j* and turn *forward* three or four revolutions, spinning the wheel at same time.

It is important to see that the foregoing instructions are complied with. Watch the running carefully the first few days or week, then turn out a little fresh grease upon the arm, after which every two to four weeks will be often enough to turn out more. Too much will show at the collar. A little care and experience will be your best guides in this.

Getting started off all right will be a great saving in the future and afford much satisfaction in all respects.

# American Axle and Wheel Company's Patent Axle and Wheel.

NEW STYLE.



OLD STYLE.

The cuts above accurately represent this axle in contrast with one of the ordinary style and of the same size of bed.

The relative size and strength is clearly and fairly shown. This axle *bed* is in all cases the same size and shape as in the common axle, but there all similarity ceases.

In the common style the *arm*, at the collar, where it usually breaks, contains only three-fourths of the metal (76 per cent.) which is in the square of the bed, and at this point it is relatively weaker because of being cut down at a right angle, from which form, the pounding of the wheel causes the metal to crystallize and break, while this axle, beginning some distance back from the arm or bearing, enlarges to a neck with a diameter equal to the cornerwise thickness of the bed, and this neck always and *necessarily* contains *double* the metal, and consequently *more than double the strength* of the common axle-arm, and being made without a square cut shoulder it will never crystallize or break.

# American Axle and Wheel Company's Patent Axle and Wheel.

## PRICE LIST.

N. B.—Only one "Grade" of Goods Made.

| List No. | AXLES. | | WHEELS. | | | Price per Set. |
|---|---|---|---|---|---|---|
| | Size of Bed. | Diam. of Arm. | Pattern No. of Hub. | No. Spokes in Hub. | Size of Spokes. | |
| 1 | $\frac{3}{4}$ | $1\frac{1}{4}$ | 10 | 14 | $\frac{3}{4}$ | $50.00 |
| | | | 19 | 16 | $\frac{3}{4}$ | 50.00 |
| 2 | $\frac{7}{8}$ | $1\frac{1}{2}$ | 20 | 14 | $\frac{7}{8}$ | 50.00 |
| | | | 29 | 16 | $\frac{7}{8}$ | 50.00 |
| 3 | 1 | $1\frac{3}{4}$ | 30 | 14 | 1 | 50.00 |
| | | | 39 | 16 | 1 | 50.00 |
| 4 | $1\frac{1}{8}$ | $1\frac{3}{4}$ | 40 | 14 | $1\frac{1}{8}$ | 50.00 |
| | | | 49 | 16 | $1\frac{1}{8}$ | 50.00 |
| 5 | $1\frac{1}{4}$ | $2\frac{1}{4}$ | 50 | 14 | $1\frac{1}{4}$ | 55.00 |
| | | | 59 | 16 | $1\frac{1}{4}$ | 55.00 |
| 6 | $1\frac{3}{8}$ | $2\frac{1}{4}$ | 60 | 14 | $1\frac{3}{8}$ | 60.00 |
| | | | 69 | 16 | $1\frac{3}{8}$ | 60.00 |
| 7 | $1\frac{1}{2}$ | $2\frac{1}{2}$ | 70 | 14 | $1\frac{1}{2}$ | 65.00 |
| | | | 79 | 16 | $1\frac{1}{2}$ | 65.00 |
| 8 | $1\frac{5}{8}$ | $2\frac{3}{4}$ | 80 | 14 | $1\frac{5}{8}$ | 70.00 |
| | | | 89 | 16 | $1\frac{5}{8}$ | 70.00 |
| 9 | $1\frac{3}{4}$ | 3 | 90 | 14 | $1\frac{3}{4}$ | 80.00 |
| | | | 99 | 16 | $1\frac{3}{4}$ | 80.00 |
| 10 | $1\frac{7}{8}$ | 3 | 100 | 14 | $1\frac{7}{8}$ | 90.00 |
| | | | 109 | 16 | $1\frac{7}{8}$ | 90.00 |
| 11 | 2 | $3\frac{1}{4}$ | 110 | 14 | 2 | 100.00 |
| | | | 119 | 16 | 2 | 100.00 |
| 12 | $2\frac{1}{4}$ | $3\frac{1}{2}$ | 120 | 14 | $2\frac{1}{4}$ | 110.00 |
| | | | 129 | 16 | $2\frac{1}{4}$ | 110.00 |
| 13 | $2\frac{1}{2}$ | $3\frac{3}{4}$ | 130 | 14 | $2\frac{1}{2}$ | 120.00 |
| | | | 139 | 16 | $2\frac{1}{2}$ | 120.00 |
| 14 | $2\frac{3}{4}$ | 4 | 140 | 14 | $2\frac{3}{4}$ | 135.00 |
| | | | 149 | 16 | $2\frac{3}{4}$ | 135.00 |
| 15 | 3 | $4\frac{1}{4}$ | 150 | 14 | 3 | 150.00 |
| | | | 159 | 16 | 3 | 150.00 |

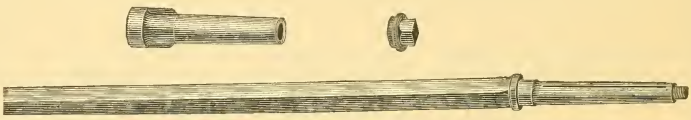
N. B.—No extra charge for Coach Bed Axles.

N. B.—No Banding, Boring or Boxing is required. Wheels are ready for use, except Tiring.

N. B.—No extra charge for Wrenches, Washers or Lubricator.

N. B.—For extra-height wheels, for extra-sized rims, and for screws or rivets in rims, the customary extra charge is made.

N. B.—Spokes for re-filling, finished ready to drive, may be ordered by "Pattern No. of Hub."



# Swelled Half Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Short Bed, . . . | $4.25 | 4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 |
| 28 | Long Bed, . . . | 5.25 | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{2}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| $15\frac{1}{2}$ | Short Bed, . . . | $4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 | 16.25 |
| $8\frac{1}{2}$ | Long Bed, . . . | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 | 20.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

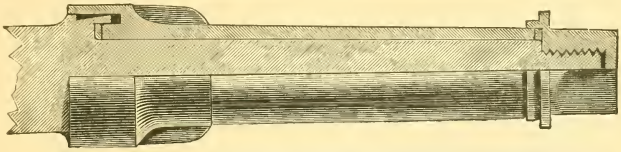
| No. | Swelled, Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Short Bed, . . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 8 | Long Bed, . . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Second Quality Iron Solid Collar Axles.

| No. | Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 Plain, $13\frac{1}{6}$ Swelled, | Short Bed, . | $2.75 | 3.25 | 4.00 | 5.25 | 6.75 | 8.75 | 11.00 | 13.50 | 17.00 |
| 6 Plain, $6\frac{1}{6}$ Swelled, | Long Bed, . | 3.50 | 4.13 | 5.13 | 6.75 | 8.50 | 10.75 | 13.25 | 16.25 | 20.50 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12 additional.
Coach Beds, to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents per set additional.



MILLER'S PATENT AXLE.

PRICES OF

# Miller's Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

## Bessemer Steel Solid Collar Axles.

| No. | | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 41 | Short Bed, . . . | $4.50 | 4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 |
| 42 | Long Bed, . . . | 5.50 | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

## Best Quality Steel Converted Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 43 | Short Bed, . . . | $4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 | 16.50 |
| 44 | Long Bed, . . . | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 | 20.50 |
| | Wrought Iron Case-Hardened Boxes extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

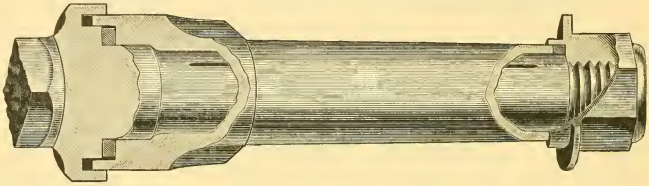
Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

## Medium Quality Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 45 | Short Bed, . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 46 | Long Bed, . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds, $\frac{3}{4}$ to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

# Half Patent Collinge Collar Axles.



## Bessemer Steel Solid Collar.

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 71 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 72 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

## Best Quality Steel Converted Iron Solid Collar.

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 73 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 74 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

# Steele's Patent Sand Box Axles.

(See cuts on page 24).

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

Coach Beds to 1¼ inch, 30 cents; 1¼ inch and larger, 60 cents per set, extra.

### Bessemer Steel.

| No. | | ⅝ to ¾ | ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Short Beds, . . | $4.25 | 4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 |
| 3 | Long Beds, . . | 5.00 | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 |

### Best Quality Steel Converted Iron, Solid Collar.

| No. | | ¾ to ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Short Beds, . . | $4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 | 17.00 |
| 2 | Long Beds, . . | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 | 19.75 |

### Second Quality Iron, Solid Collar.

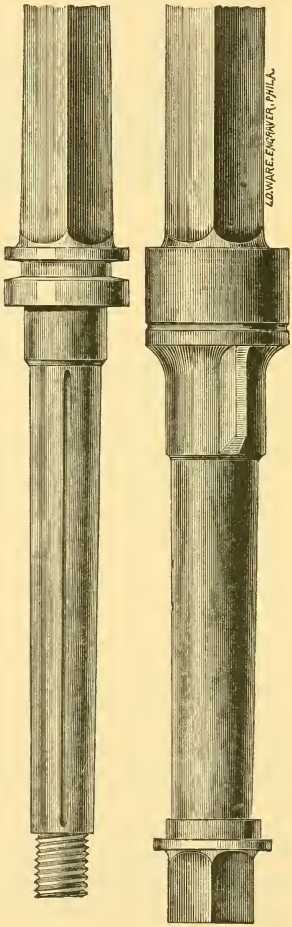
| No. | | ¾ to 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ | 2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Short Beds, . . | $3.00 | 3.50 | 4.25 | 5.88 | 7.38 | 9.25 | 11.38 | 14.00 |
| 1 | Long Beds, . . | 3.75 | 4.38 | 5.50 | 7.25 | 9.00 | 11.13 | 13.50 | 17.00 |

Add to List Price for Case-Hardening, ¾ to 1⅜, 60 cents; 1⅝ and larger, $1.12: Steel Converting, ¾ to 1⅜, $1.12; 1⅝ and larger, $2.20.

---

**Common, Concord, Miller's Patent Oil Nut, Steele's Patent Oil Nut, Full and Half Collinge, Half Patent Collinge Collar, Killam Patent Spring Washer, Stiver's Long Swell Miller Patent and other styles of Axles furnished when desired.**

# Steele's Patent Sand Box Axles.



ANNULLING ALL PREVIOUS LISTS.

---

EDWARD E. BRADLEY, President. ERASTUS A. DOOLITTLE, Secretary.

# PRICE LIST

No. 44.

# New Haven Wheel Co.

MANUFACTURERS OF

## VEHICLE WHEELS.

*Usual Styles, English Sharp Edge,*

*Sarven Patent, Warner Patent,*

*Patent Banded Hub*

*and Fire Department Wheels,*

— ALSO —

*American Axle and Wheel Co's Patent Axle and Wheel.*

NEW HAVEN, CONN., U. S. A.

1889.

SECOND GROWTH

# EASTERN TIMBER

*A Specialty in our Manufactures.*

DEALERS IN

## Miller's Patent, Steele's Patent, Half Patent and other Axles.

*WHEELS OF ALL SIZES TIRED*

—AND—

Axle Boxes accurately set in Hubs whenever desired.

---

## CONTENTS.


| | PAGE. |
|---|---|
| USUAL STYLES WHEELS, | 7 |
| SULKY WHEELS, | 7 |
| SARVEN PATENT WHEELS, | 9 |
| WARNER PATENT WHEELS, | 11 |
| KENNEY PATENT BANDED HUB WHEELS, | 12 |
| PATENT BACK BANDS FOR HUBS, | 13 |
| SPOKES, RIMS AND HUBS, | 14 |
| IRONING (TIRING, BOXING, ETC.), | 15 |
| AMERICAN AXLE AND WHEEL CO.'S PATENT AXLE AND WHEEL, | 16–19 |
| AXLES (HALF PATENT), | 20 |
| AXLES (MILLER'S PATENT), | 21 |
| AXLES, HALF PATENT COLLINGE COLLAR, | 22 |
| AXLES (STEELE'S PATENT), | 23 |


TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

ESTABLISHED 1845.

# New Haven Wheel Company.

*TO OUR PATRONS:*

We take pleasure in presenting the trade with our 1889 Price List herewith and trust it will be found entirely satisfactory.

No changes to speak of have been made in the prices of goods heretofore quoted. A few more sizes of wheels have been added this year, also a new axle and wheel which are mentioned more particularly below. We never felt better prepared to serve our customers in every department of our business than at present.

It will be our constant and utmost endeavor in the future, as in the past, to give our customers perfect satisfaction; and the added improvements which the experience of nearly forty-five years in the business has suggested, give us faith to believe that our success in so doing is beyond experiment.

We have now on hand a very large stock of *seasoned second growth Hickory and White Oak*, and with the best modern machinery and long experience in the business feel that we are enabled to furnish the *best wheels made for the prices charged.* We challenge a comparison, at equal cost, with any and all other makes of wheels, for *style*, *durability* and *strength.*

We desire to call particular attention to our light wheels. They are all made of pure second growth Hickory spokes and rims and Elm hubs, carefully seasoned and put together, nicely finished and the prices for them will be found very reasonable.

It seems hardly necessary for us to especially notice our unpatented styles of Wheels, which include English, and Common styles, they being so thoroughly well known already. A steadily increasing trade from 1845 down to the present time attests the care we take with them, and their consequent value. It is our intention, and will be our constant endeavor in the future, to *excel* in these lines of work. We make but two qualities ("Extra" and "No. 1") of Wheels having Sharp Edged (English Style) Spokes. Of the usual styles Wood Hub Wheels, we make *four* qualities, viz: Extra, No. 1, No. 2, and No. 3.

We have very desirable Spoke Patterns, etc., for light wheels for road wagons and other light driving vehicles. We ask a special trial for these, believing them to be the most stylish and durable wheels of the kind made.

We make four grades of the light sizes of the genuine "Sarven" Wheel, designated A, B, C and D respectively.

We shall continue to pay special attention to the *first class* (A) Sarven Wheel, which has been adjudged by the public, after more than thirty years' use, the BEST PATENT WHEEL MADE. The lower grades are made in order to supply the constant demand for good durable wheels at moderate prices. As such we confidently recommend them.

We also make four qualities of the Warner Patent Wheel, designated XXXX, XXX, XX and X respectively. This wheel has now been before the trade for some twenty years, and has been accepted and approved on its merits. It is a favorite wheel, very reliable, and its use is quite widely extended.

Of the Kenney Patent Banded Hub Wheels we also make four qualities of the light sizes, designated XXXX, XXX, XX and X respectively. This excellent wheel has been thoroughly tried, is very popular and continues to grow in public favor.

During the past four years we have manufactured the wheels sold by the American Axle and Wheel Company of New York, and through this experience have carefully observed the growth and character of their trade. The great merit both in their axle and wheel, as well as their superior lubricating device, have led us to arrange with that company to offer their goods to our trade, which we do in this issue. They make but one grade of these goods, and that strictly the best.

For the purpose of meeting a demand both at home and abroad, and especially in those places where properly skilled labor, pertaining to this branch of business, is not readily attainable, we some years ago added to our wheel business the tiring, boxing and banding of wheels; also the furnishing of axles. Our customers are thereby enabled to procure their wheels simply finished in the wood, or to procure them tired, or tired, banded and boxed, and with any usual style or make of axles they desire. This department is greatly appreciated by many of our customers, who use it frequently and find it of great convenience and advantage.

We ask a fair trial for all our work. Thanking our many friends and customers for generous favors in the past and trusting to receive and merit such in the future, we remain, with great respect,

NEW HAVEN WHEEL CO.

NEW HAVEN, CONN., U. S. A.
JANUARY 1ST, 1889.

N. B.—The price of Screwing or Riveting rims of all styles of wheels is given on page 7, and is governed always by the *width of tread.*

Be particular to give all dimensions possible when ordering wheels, as all omissions will be supplied by us, and customers must take the risk of their being right.

No wheels warranted unless length of tenon is greater than width of spoke at shoulder after hubs are cut out for axle boxes.

Printed blanks or blank books for ordering wheels furnished on application.

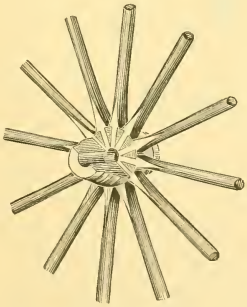
## MAXIMUM SIZES.

If height of wheels (all styles) exceeds 4 feet front and 4 feet 8 inches back, on sets, or 4 feet 4 inches on pairs, they will be subject to an additional charge of 50 cents per inch per wheel for all such excess.

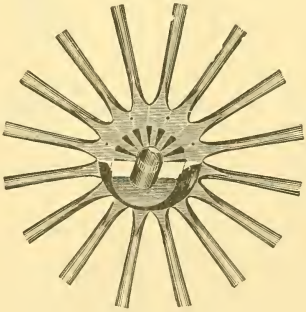
If width of tread exceeds width of spokes at hub an extra charge may be made.

If *Depth of Rims* exceeds the following an extra charge may be made.

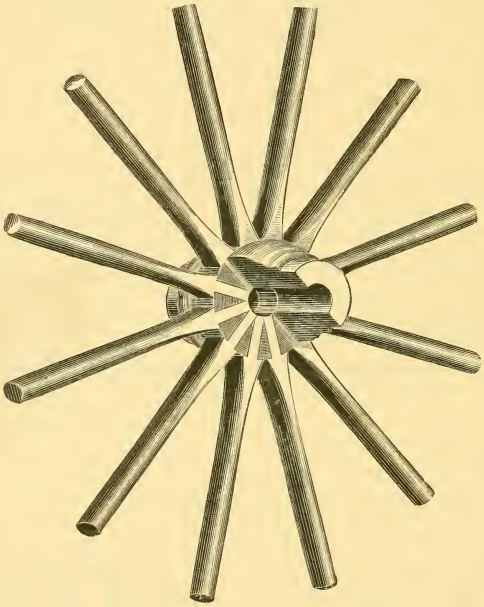
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $\frac{3}{4}$ to $1\frac{1}{4}$ in. | spoke-wheels | inclusive, | not more | than | $\frac{1}{4}$ in. | deeper | than spoke | is wide |
| $1\frac{3}{8}$ to $1\frac{5}{8}$ | " | " | " | " | $\frac{3}{8}$ " | " | " |
| $1\frac{3}{4}$ to $2\frac{1}{4}$ | " | " | " | " | $\frac{1}{2}$ " | " | " |
| $2\frac{3}{8}$ to 3 | " | " | " | " | $\frac{5}{8}$ " | " | " |



Common or usual Style Wood Hub Wheel.



"Sarven" Patent Wheel.



Section showing Usual Style Wood Hub Wheel.

Usual (New York) Style Wheels at $15,00, $12.00, $9.50, and $7.00 per set.

# Not Patented Wheels.

Be particular to give quality, also height and all other dimensions possible.

| Per Set. | Usual Style Wood Hub Wheels. | | | | Sharp Edge Spokes, English Style. | |
|---|---|---|---|---|---|---|
| | Extra. | No. 1. | No. 2. | No. 3. | Extra. | No. 1. |
| With $1\frac{1}{8}$ in. Spokes and under. | $15.00 | $12.00 | $ 9.50 | $ 7.00 | $16.00 | $13.00 |
| " $1\frac{9}{16}$ and $1\frac{1}{4}$ in. Spokes. | 16.00 | 13.00 | 10.00 | 8.00 | 17.00 | 14.00 |
| " $1\frac{5}{16}$ " | 16.50 | 13.50 | 11.00 | 8.50 | 17.50 | 14.50 |
| " $1\frac{3}{8}$ " | 17.00 | 14.00 | 12.00 | 9.00 | 18.00 | 15.00 |
| " $1\frac{7}{16}$ " | 18.00 | 15.00 | 12.50 | 9.50 | 19.00 | 16.00 |
| " $1\frac{1}{2}$ " | 19.00 | 16.00 | 13.00 | 10.00 | 20.00 | 17.00 |
| " $1\frac{9}{16}$ " | 20.50 | 17.50 | 14.00 | 10.50 | 21.50 | 18.50 |
| " $1\frac{5}{8}$ " | 22.00 | 19.00 | 15.00 | 11.00 | 23.00 | 20.00 |
| " $1\frac{11}{16}$ " | 23.50 | 20.00 | 16.00 | 12.00 | 24.50 | 21.00 |
| " $1\frac{3}{4}$ " | 25.00 | 21.00 | 17.00 | 13.00 | 26.00 | 22.00 |
| " $1\frac{7}{8}$ " | 28.00 | 24.00 | 20.00 | 15.00 | 29.00 | 25.00 |
| " 2 " | 30.00 | 26.00 | 22.00 | 18.00 | 31.00 | 27.00 |
| " $2\frac{1}{4}$ " | 33.00 | 29.00 | 25.00 | 21.00 | 34.00 | 30.00 |
| " $2\frac{1}{2}$ " | 38.00 | 33.00 | 29.00 | 25.00 | | |
| " $2\frac{3}{4}$ " | 42.00 | 36.00 | 32.00 | | | |
| " 3 " | 46.00 | 40.00 | 36.00 | | | |
| " $3\frac{1}{4}$ " | 52.00 | 46.00 | 42.00 | | | |

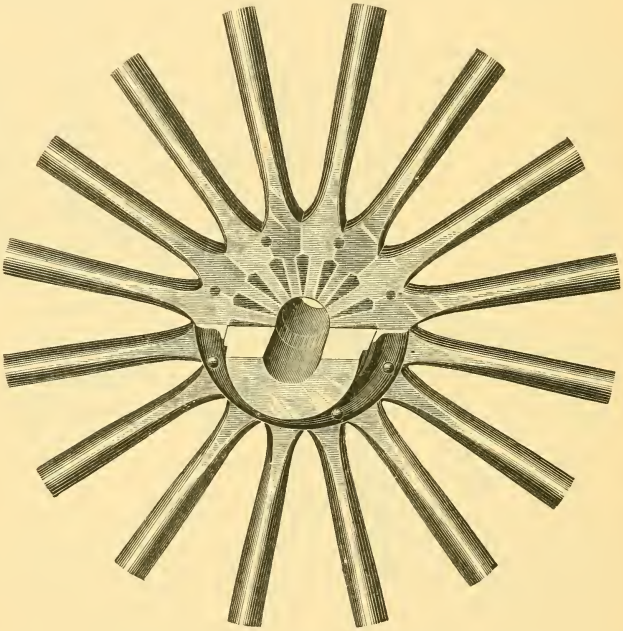
Of Sharp Edge Wheels we make *only the two qualities above quoted.*

# Sulky Wheels—Best.

| SPOKES NOT EXCEEDING 1⅛ INCHES IN WIDTH. | Usual Styles. | Warner Patent and Kenney Patent. | Sarven Patent. |
|---|---|---|---|
| 4 feet 6 inches high, per pair, . | $ 9.50 | $10.00 | $10.50 |
| 4 " 7 " " . | 10.50 | 11.00 | 11.50 |
| 4 " 8 " " . | 11.50 | 12.00 | 12.50 |
| 4 " 9 " " . | 12.50 | 13.00 | 13.50 |
| 4 " 10 " " . | 13.50 | 14.00 | 14.50 |
| 4 " 11 " " . | 14.50 | 15.00 | 15.50 |
| 5 " " " . | 15.50 | 16.00 | 16.50 |

Second quality Sulky Wheels cost $2.00 per pair less than prices quoted above. We make but two qualities of Sulky Wheels.

Size of Spokes in above lists is taken as basis of price. Other sizes should be in proportion, otherwise the wheels will be liable to an extra charge.



Section showing interior of genuine "Sarven" Patent Wheel.

Sarven Patent Wheels at $17.00, $14.00, $11.50, and $9.00 per set.

***B***—Is the square bed of axle, conforming in shape and size to the common axle.

***A***—Is the neck, its diameter equal to the cornerwise thickness of the bed.

***O***—Is the arm or bearing; its diameter being considerably greater than the neck.

***C***—Is collar or sand band, of malleable iron, forced upon the neck. Entering between back end of hub and box, as shown, it helps to form the annular recesses "*M* and *N*" to fill with spent grease and exclude sand, grit, etc.

***D***—Is axle box of best quality gray iron. It is without taper inside and outside and is forced into the malleable iron hub. This box has a flange "*e*" cast solid inside near its front end and the leather washers "*f* and *g*" on either side cushion the end of the axle arm and the flange "*d*" of the nut in either direction.

***H***—Is axle nut of malleable iron, hollow as shown, and screwed into the hollow end of axle arm.

***I***—Is malleable iron cap screwing on end of box, preventing loss of axle nut or escape of lubricant and excluding all dirt or grit.

***G***—Is supply of grease filling hollow of arm. By removing cap *I*, insert key through "*j*" in the nut into socket in piston "*P*" and turning forward the grease is expelled through "*h*" and along groove in top of arm to the bearing. To use oil remove the piston "*P*" entirely, clean out all grease from the chamber and holes in *top and bottom*, put on the wheel screw in the nut and with ordinary oiler inject the oil through "*j*" in nut whence it will run to the bearing. In using oil the leather washers "*f* and *g*" should be thick enough to prevent end play but not bind. In using grease the washer or packing shown in the sand collar may be omitted or not, and washers "*f* and *g*" should be free enough to allow a little end play.

These axles are made right and left the same as others. The wheels are not, but the caps on front end of hubs are all threaded right hand. Otherwise all corresponding parts in each size are made interchangeable.

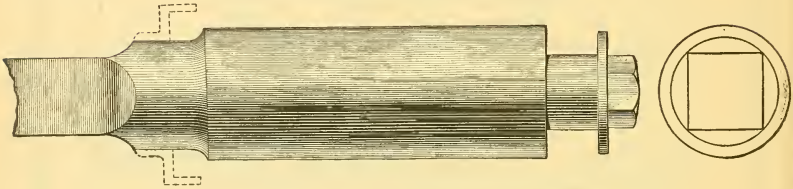
We prefer and advise but little dish in our wheels. Our spokes are driven quite firm and will not draw much in tiring, so do not "draught" the rim too much. Set the axle with very little if any front gather, as the arm is straight. Set the bottom of arms so as to give "plumb spoke" as in other wheels. Do not heat the axles near the collars—give the set in the center. When ready to grease screw out the piston *P*, carefully clean the same and the grease chamber to get all sand and grit out of the threads; also the collar, the hub and all parts. Now fill the chamber *full* of grease, screw in the piston 1 inch to 1¼ inch from the end, far enough to let the axle nut be screwed well home. Put on wheel, screw in the nut securely, insert the key through *j* and turn *forward* three or four revolutions, spinning the wheel at same time.

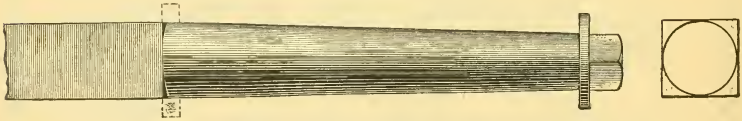
It is important to see that the foregoing instructions are complied with. Watch the running carefully the first few days or week, then turn out a little fresh grease upon the arm, after which every two to four weeks will be often enough to turn out more. Too much will show at the collar. A little care and experience will be your best guides in this.

Getting started off all right will be a great saving in the future and afford much satisfaction in all respects.

# American Axle and Wheel Company's Patent Axle and Wheel.

NEW STYLE.





OLD STYLE.

The cuts above accurately represent this axle in contrast with one of the ordinary style and of the same size of bed.

The relative size and strength is clearly and fairly shown. This axle *bed* is in all cases the same size and shape as in the common axle, but there all similarity ceases.

In the common style the *arm*, at the collar, where it usually breaks, contains only three-fourths of the metal (76 per cent.) which is in the square of the bed, and at this point it is relatively weaker because of being cut down at a right angle, from which form, the pounding of the wheel causes the metal to crystallize and break, while this axle, beginning some distance back from the arm or bearing, enlarges to a neck with a diameter equal to the cornerwise thickness of the bed, and this neck always and *necessarily* contains *double* the metal, and consequently *more than double the strength* of the common axle-arm, and being made without a square cut shoulder it will never crystallize or break.

# American Axle and Wheel Company's Patent Axle and Wheel.

## PRICE LIST.

N. B.—Only one "Grade" of Goods Made.

| List No. | AXLES. | | WHEELS. | | | Price per Set. |
|---|---|---|---|---|---|---|
| | Size of Bed. | Diam. of Arm. | Pattern No. of Hub. | No. Spokes in Hub. | Size of Spokes. | |
| 1 | $\frac{3}{4}$ | $1\frac{1}{4}$ | 10 | 14 | $\frac{3}{4}$ | $50.00 |
| | | | 19 | 16 | $\frac{3}{4}$ | 50.00 |
| 2 | $\frac{7}{8}$ | $1\frac{1}{2}$ | 20 | 14 | $\frac{7}{8}$ | 50.00 |
| | | | 29 | 16 | $\frac{7}{8}$ | 50.00 |
| 3 | 1 | $1\frac{3}{4}$ | 30 | 14 | 1 | 50.00 |
| | | | 39 | 16 | 1 | 50.00 |
| 4 | $1\frac{1}{8}$ | $1\frac{3}{4}$ | 40 | 14 | $1\frac{1}{8}$ | 50.00 |
| | | | 49 | 16 | $1\frac{1}{8}$ | 50.00 |
| 5 | $1\frac{1}{4}$ | $2\frac{1}{4}$ | 50 | 14 | $1\frac{1}{4}$ | 55.00 |
| | | | 59 | 16 | $1\frac{1}{4}$ | 55.00 |
| 6 | $1\frac{3}{8}$ | $2\frac{1}{4}$ | 60 | 14 | $1\frac{3}{8}$ | 60.00 |
| | | | 69 | 16 | $1\frac{3}{8}$ | 60.00 |
| 7 | $1\frac{1}{2}$ | $2\frac{1}{2}$ | 70 | 14 | $1\frac{1}{2}$ | 65.00 |
| | | | 79 | 16 | $1\frac{1}{2}$ | 65.00 |
| 8 | $1\frac{5}{8}$ | $2\frac{3}{4}$ | 80 | 14 | $1\frac{5}{8}$ | 70.00 |
| | | | 89 | 16 | $1\frac{5}{8}$ | 70.00 |
| 9 | $1\frac{3}{4}$ | 3 | 90 | 14 | $1\frac{3}{4}$ | 80.00 |
| | | | 99 | 16 | $1\frac{3}{4}$ | 80.00 |
| 10 | $1\frac{7}{8}$ | 3 | 100 | 14 | $1\frac{7}{8}$ | 90.00 |
| | | | 109 | 16 | $1\frac{7}{8}$ | 90.00 |
| 11 | 2 | $3\frac{1}{4}$ | 110 | 14 | 2 | 100.00 |
| | | | 119 | 16 | 2 | 100.00 |
| 12 | $2\frac{1}{4}$ | $3\frac{1}{2}$ | 120 | 14 | $2\frac{1}{4}$ | 110.00 |
| | | | 129 | 16 | $2\frac{1}{4}$ | 110.00 |
| 13 | $2\frac{1}{2}$ | $3\frac{3}{4}$ | 130 | 14 | $2\frac{1}{2}$ | 120.00 |
| | | | 139 | 16 | $2\frac{1}{2}$ | 120.00 |
| 14 | $2\frac{3}{4}$ | 4 | 140 | 14 | $2\frac{3}{4}$ | 135.00 |
| | | | 149 | 16 | $2\frac{3}{4}$ | 135.00 |
| 15 | 3 | $4\frac{1}{4}$ | 150 | 14 | 3 | 150.00 |
| | | | 159 | 16 | 3 | 150.00 |

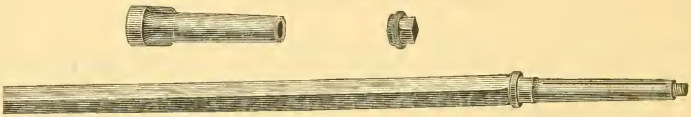
N. B.—No extra charge for Coach Bed Axles.

N. B.—No Banding, Boring or Boxing is required. Wheels are ready for use, except Tiring.

N. B.—No extra charge for Wrenches, Washers or Lubricator.

N. B.—For extra-height wheels, for extra-sized rims, and for screws or rivets in rims, the customary extra charge is made.

N. B.—Spokes for re-filling, finished ready to drive, may be ordered by "Pattern No. of Hub."



# Swelled Half Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

## Bessemer Steel Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Short Bed, . . . | $4.25 | 4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 |
| 28 | Long Bed, . . . | 5.25 | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 |
| | Wrought Iron Case-Hardened Boxes, extra. | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents ; $1\frac{1}{4}$ and larger, 60 cents advance.

## Best Quality Steel Converted Iron Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| $15\frac{1}{2}$ | Short Bed, . . . | $4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 | 16.25 |
| $8\frac{1}{2}$ | Long Bed, . . . | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 | 20.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

Coach Beds to $1\frac{1}{4}$, 30 cents ; $1\frac{1}{4}$ and larger, 60 cents advance.

## Medium Quality Iron Solid Collar Axles.

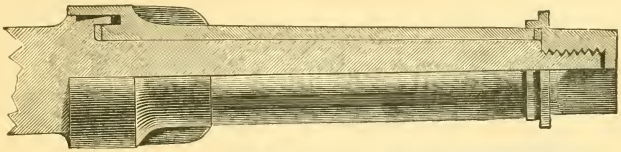
| No. | Swelled, Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Short Bed, . . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 8 | Long Bed, . . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents ; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds to $1\frac{1}{4}$, 30 cents ; $1\frac{1}{4}$ and larger, 60 cents advance.

## Second Quality Iron Solid Collar Axles.

| No. | Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 Plain, 13½ Swelled, | Short Bed, . | $2.75 | 3.25 | 4.00 | 5.25 | 6.75 | 8.75 | 11.00 | 13.50 | 17.00 |
| 6 Plain, 6½ Swelled, | Long Bed, . | 3.50 | 4.13 | 5.13 | 6.75 | 8.50 | 10.75 | 13.25 | 16.25 | 20.50 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents ; $1\frac{3}{8}$ and larger, $1.12 additional.
Coach Beds, to $1\frac{1}{4}$, 30 cents ; $1\frac{1}{4}$ and larger, 60 cents per set additional.



MILLER'S PATENT AXLE.

PRICES OF

# Miller's Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

## Bessemer Steel Solid Collar Axles.

| No. | | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 41 | Short Bed, . . . | $4.50 | 4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 |
| 42 | Long Bed, . . . | 5.50 | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

## Best Quality Steel Converted Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 43 | Short Bed, . . . | $4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 | 16.50 |
| 44 | Long Bed, . . . | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 | 20.50 |
| | Wrought Iron Case-Hardened Boxes extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

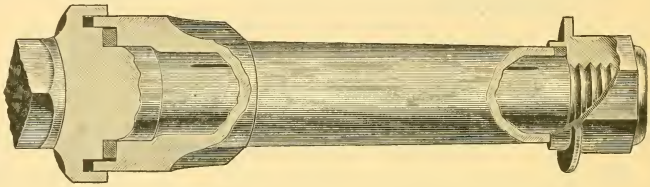
Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

## Medium Quality Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 45 | Short Bed, . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 46 | Long Bed, . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds, $\frac{3}{4}$ to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

# Half Patent Collinge Collar Axles.



**Bessemer Steel Solid Collar.**

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 71 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 72 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

**Best Quality Steel Converted Iron Solid Collar.**

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 73 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 74 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

# Steele's Patent Sand Box Axles.

(See cuts on page 24).

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

Coach Beds to 1¼ inch, 30 cents; 1¼ inch and larger, 60 cents per set, extra.

**Bessemer Steel.**

| No. | | ⅝ to ¾ | ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Short Beds, . . | $4.25 | 4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 |
| 3 | Long Beds, . . | 5.00 | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 |

**Best Quality Steel Converted Iron, Solid Collar.**

| No. | | ¾ to ⅞ | 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Short Beds, . . | $4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 | 17.00 |
| 2 | Long Beds, . . | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 | 19.75 |

**Second Quality Iron, Solid Collar.**

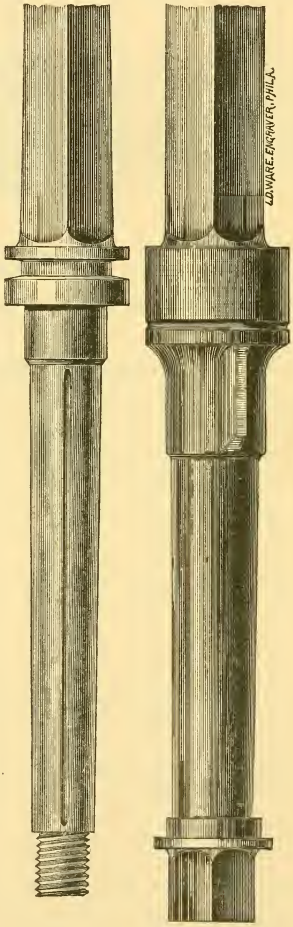
| No. | | ¾ to 1 | 1⅛ | 1¼ | 1⅜ | 1½ | 1⅝ | 1¾ | 2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Short Beds, . . | $3.00 | 3.50 | 4.25 | 5.88 | 7.38 | 9.25 | 11.38 | 14.00 |
| 1 | Long Beds, . . | 3.75 | 4.38 | 5.50 | 7.25 | 9.00 | 11.13 | 13.50 | 17.00 |

Add to List Price for Case-Hardening, ¾ to 1⅜, 60 cents; 1⅜ and larger, $1.12; Steel Converting, ¾ to 1⅜, $1.12; 1⅜ and larger, $2.20.

---

**Common, Concord, Miller's Patent Oil Nut, Steele's Patent Oil Nut, Full and Half Collinge, Half Patent Collinge Collar, Killam Patent Spring Washer, Stiver's Long Swell Miller Patent and other styles of Axles furnished when desired.**

# Steele's Patent Sand Box Axles.



ANNULLING ALL PREVIOUS LISTS.

EDWARD E. BRADLEY, President. ERASTUS A. DOOLITTLE, Secretary.

# PRICE LIST

No. 44.

# New Haven Wheel Co.

MANUFACTURERS OF

## VEHICLE WHEELS.

*Usual Styles, English Sharp Edge,*

*Sarven Patent, Warner Patent,*

*Patent Banded Hub*

*and Fire Department Wheels,*

— ALSO —

*American Axle and Wheel Co's Patent Axle and Wheel.*

NEW HAVEN, CONN., U. S. A.

1889.

SECOND GROWTH

# EASTERN TIMBER

*A Specialty in our Manufactures.*

DEALERS IN

## Miller's Patent, Steele's Patent, Half Patent and other Axles.

*WHEELS OF ALL SIZES TIRED*

—AND—

Axle Boxes accurately set in Hubs whenever desired.

---

## CONTENTS.


| | PAGE. |
|---|---|
| USUAL STYLES WHEELS, | 7 |
| SULKY WHEELS, | 7 |
| SARVEN PATENT WHEELS, | 9 |
| WARNER PATENT WHEELS, | 11 |
| KENNEY PATENT BANDED HUB WHEELS, | 12 |
| PATENT BACK BANDS FOR HUBS, | 13 |
| SPOKES, RIMS AND HUBS, | 14 |
| IRONING (TIRING, BOXING, ETC.), | 15 |
| AMERICAN AXLE AND WHEEL CO.'S PATENT AXLE AND WHEEL, | 16–19 |
| AXLES (HALF PATENT), | 20 |
| AXLES (MILLER'S PATENT), | 21 |
| AXLES, HALF PATENT COLLINGE COLLAR, | 22 |
| AXLES (STEELE'S PATENT), | 23 |


TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.

ESTABLISHED 1845.

# New Haven Wheel Company.

*TO OUR PATRONS:*

We take pleasure in presenting the trade with our 1889 Price List herewith and trust it will be found entirely satisfactory.

No changes to speak of have been made in the prices of goods heretofore quoted. A few more sizes of wheels have been added this year, also a new axle and wheel which are mentioned more particularly below. We never felt better prepared to serve our customers in every department of our business than at present.

It will be our constant and utmost endeavor in the future, as in the past, to give our customers perfect satisfaction; and the added improvements which the experience of nearly forty-five years in the business has suggested, give us faith to believe that our success in so doing is beyond experiment.

We have now on hand a very large stock of *seasoned second growth Hickory and White Oak*, and with the best modern machinery and long experience in the business feel that we are enabled to furnish the *best wheels made for the prices charged.* We challenge a comparison, at equal cost, with any and all other makes of wheels, for *style, durability* and *strength.*

We desire to call particular attention to our light wheels. They are all made of pure second growth Hickory spokes and rims and Elm hubs, carefully seasoned and put together, nicely finished and the prices for them will be found very reasonable.

It seems hardly necessary for us to especially notice our unpatented styles of Wheels, which include English, and Common styles, they being so thoroughly well known already. A steadily increasing trade from 1845 down to the present time attests the care we take with them, and their consequent value. It is our intention, and will be our constant endeavor in the future, to *excel* in these lines of work. We make but two qualities ("Extra" and "No. 1") of Wheels having Sharp Edged (English Style) Spokes. Of the usual styles Wood Hub Wheels, we make *four* qualities, viz: Extra, No. 1, No. 2, and No. 3.

We have very desirable Spoke Patterns, etc., for light wheels for road wagons and other light driving vehicles. We ask a special trial for these, believing them to be the most stylish and durable wheels of the kind made.

We make four grades of the light sizes of the genuine "Sarven" Wheel, designated A, B, C and D respectively.

We shall continue to pay special attention to the *first class* (A) Sarven Wheel, which has been adjudged by the public, after more than thirty years' use, the BEST PATENT WHEEL MADE. The lower grades are made in order to supply the constant demand for good durable wheels at moderate prices. As such we confidently recommend them.

We also make four qualities of the Warner Patent Wheel, designated XXXX, XXX, XX and X respectively. This wheel has now been before the trade for some twenty years, and has been accepted and approved on its merits. It is a favorite wheel, very reliable, and its use is quite widely extended.

Of the Kenney Patent Banded Hub Wheels we also make four qualities of the light sizes, designated XXXX, XXX, XX and X respectively. This excellent wheel has been thoroughly tried, is very popular and continues to grow in public favor.

During the past four years we have manufactured the wheels sold by the American Axle and Wheel Company of New York, and through this experience have carefully observed the growth and character of their trade. The great merit both in their axle and wheel, as well as their superior lubricating device, have led us to arrange with that company to offer their goods to our trade, which we do in this issue. They make but one grade of these goods, and that strictly the best.

For the purpose of meeting a demand both at home and abroad, and especially in those places where properly skilled labor, pertaining to this branch of business, is not readily attainable, we some years ago added to our wheel business the tiring, boxing and banding of wheels; also the furnishing of axles. Our customers are thereby enabled to procure their wheels simply finished in the wood, or to procure them tired, or tired, banded and boxed, and with any usual style or make of axles they desire. This department is greatly appreciated by many of our customers, who use it frequently and find it of great convenience and advantage.

We ask a fair trial for all our work. Thanking our many friends and customers for generous favors in the past and trusting to receive and merit such in the future, we remain, with great respect,

NEW HAVEN WHEEL CO.

NEW HAVEN, CONN., U. S. A.
JANUARY 1ST, 1889.

N. B.—The price of Screwing or Riveting rims of all styles of wheels is given on page 7, and is governed always by the *width of tread.*

Be particular to give all dimensions possible when ordering wheels, as all omissions will be supplied by us, and customers must take the risk of their being right.

No wheels warranted unless length of tenon is greater than width of spoke at shoulder after hubs are cut out for axle boxes.

Printed blanks or blank books for ordering wheels furnished on application.

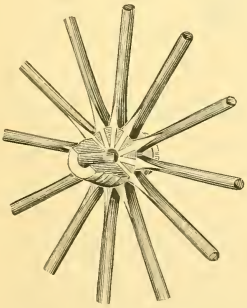
## MAXIMUM SIZES.

If height of wheels (all styles) exceeds 4 feet front and 4 feet 8 inches back, on sets, or 4 feet 4 inches on pairs, they will be subject to an additional charge of 50 cents per inch per wheel for all such excess.

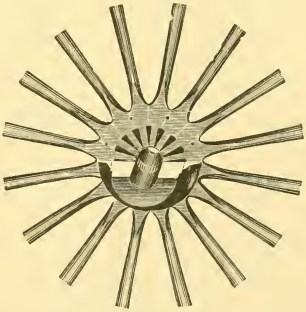
If width of tread exceeds width of spokes at hub an extra charge may be made.

If *Depth of Rims* exceeds the following an extra charge may be made.

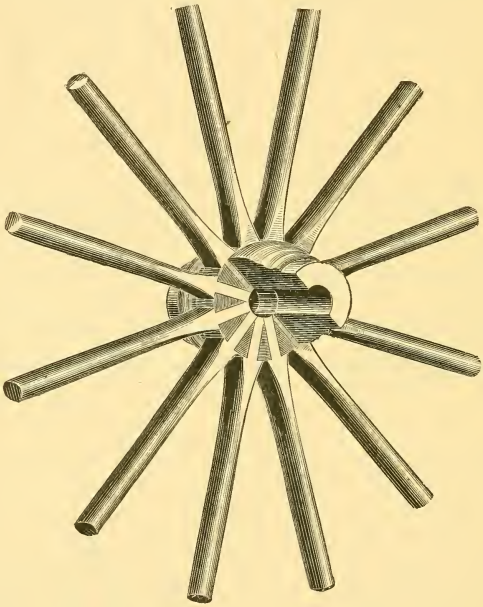
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| $\frac{5}{4}$ to $1\frac{1}{4}$ in. | spoke-wheels | inclusive, | not more | than | $\frac{1}{4}$ in. | deeper | than | spoke is wide |
| $1\frac{3}{8}$ to $1\frac{5}{8}$ | " | " | " | " | $\frac{3}{8}$ " | " | " |
| $1\frac{3}{4}$ to $2\frac{1}{4}$ | " | " | " | " | $\frac{1}{2}$ " | " | " |
| $2\frac{3}{8}$ to 3 | " | " | " | " | $\frac{5}{8}$ " | " | " |



Common or usual Style Wood Hub Wheel.



"Sarven" Patent Wheel.



Section showing Usual Style Wood Hub Wheel.

Usual (New York) Style Wheels at $15,00, $12.00, $9.50, and $7.00 per set.

# Not Patented Wheels.

Be particular to give quality, also height and all other dimensions possible.

| Per Set. | Usual Style Wood Hub Wheels. | | | | Sharp Edge Spokes, English Style. | |
|---|---|---|---|---|---|---|
| | Extra. | No. 1. | No. 2. | No. 3. | Extra. | No. 1. |
| With $1\frac{1}{8}$ in. Spokes and under. | $15.00 | $12.00 | $ 9.50 | $ 7.00 | $16.00 | $13.00 |
| " $1\frac{3}{16}$ and $1\frac{1}{4}$ in. Spokes. | 16.00 | 13.00 | 10.00 | 8.00 | 17.00 | 14.00 |
| " $1\frac{5}{16}$ " | 16.50 | 13.50 | 11.00 | 8.50 | 17.50 | 14.50 |
| " $1\frac{3}{8}$ " | 17.00 | 14.00 | 12.00 | 9.00 | 18.00 | 15.00 |
| " $1\frac{7}{16}$ " | 18.00 | 15.00 | 12.50 | 9.50 | 19.00 | 16.00 |
| " $1\frac{1}{2}$ " | 19.00 | 16.00 | 13.00 | 10.00 | 20.00 | 17.00 |
| " $1\frac{9}{16}$ " | 20.50 | 17.50 | 14.00 | 10.50 | 21.50 | 18.50 |
| " $1\frac{5}{8}$ " | 22.00 | 19.00 | 15.00 | 11.00 | 23.00 | 20.00 |
| " $1\frac{11}{16}$ " | 23.50 | 20.00 | 16.00 | 12.00 | 24.50 | 21.00 |
| " $1\frac{3}{4}$ " | 25.00 | 21.00 | 17.00 | 13.00 | 26.00 | 22.00 |
| " $1\frac{7}{8}$ " | 28.00 | 24.00 | 20.00 | 15.00 | 29.00 | 25.00 |
| " 2 " | 30.00 | 26.00 | 22.00 | 18.00 | 31.00 | 27.00 |
| " $2\frac{1}{4}$ " | 33.00 | 29.00 | 25.00 | 21.00 | 34.00 | 30.00 |
| " $2\frac{1}{2}$ " | 38.00 | 33.00 | 29.00 | 25.00 | | |
| " $2\frac{3}{4}$ " | 42.00 | 36.00 | 32.00 | | | |
| " 3 " | 46.00 | 40.00 | 36.00 | | | |
| " $3\frac{1}{4}$ " | 52.00 | 46.00 | 42.00 | | | |

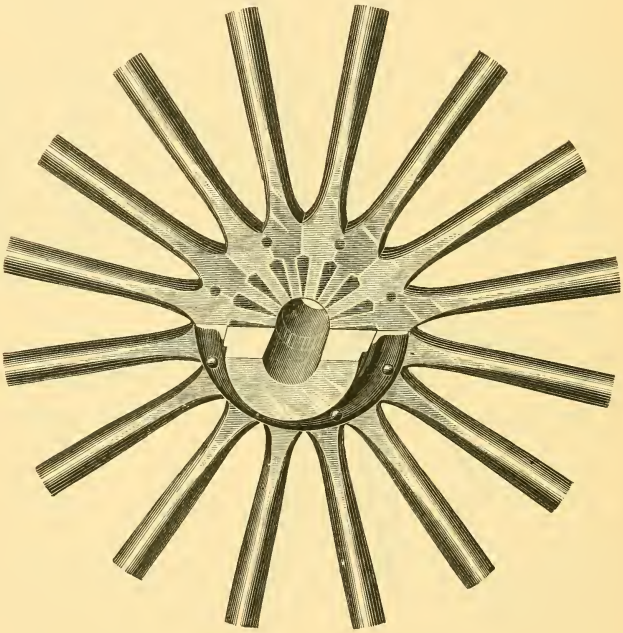
Of Sharp Edge Wheels we make *only the two qualities above quoted.*

# Sulky Wheels—Best.

| Spokes not exceeding $1\frac{1}{8}$ inches in width. | Usual Styles. | Warner Patent and Kenney Patent. | Sarven Patent. |
|---|---|---|---|
| 4 feet 6 inches high, per pair, . | $ 9.50 | $10.00 | $10.50 |
| 4 " 7 " " . | 10.50 | 11.00 | 11.50 |
| 4 " 8 " " . | 11.50 | 12.00 | 12.50 |
| 4 " 9 " " . | 12.50 | 13.00 | 13.50 |
| 4 " 10 " " . | 13.50 | 14.00 | 14.50 |
| 4 " 11 " " . | 14.50 | 15.00 | 15.50 |
| 5 " " " . | 15.50 | 16.00 | 16.50 |

Second quality Sulky Wheels cost $2.00 per pair less than prices quoted above. We make but two qualities of Sulky Wheels.

Size of Spokes in above lists is taken as basis of price. Other sizes should be in proportion, otherwise the wheels will be liable to an extra charge.



Section showing interior of genuine "Sarven" Patent Wheel.

Sarven Patent Wheels at $17.00, $14.00, $11.50, and $9.00 per set.

***B***—Is the square bed of axle, conforming in shape and size to the common axle.

***A***—Is the neck, its diameter equal to the cornerwise thickness of the bed.

***O***—Is the arm or bearing; its diameter being considerably greater than the neck.

***C***—Is collar or sand band, of malleable iron, forced upon the neck. Entering between back end of hub and box, as shown, it helps to form the annular recesses "*M* and *N*" to fill with spent grease and exclude sand, grit, etc.

***D***—Is axle box of best quality gray iron. It is without taper inside and outside and is forced into the malleable iron hub. This box has a flange "*e*" cast solid inside near its front end and the leather washers "*f* and *g*" on either side cushion the end of the axle arm and the flange "*d*" of the nut in either direction.

***H***—Is axle nut of malleable iron, hollow as shown, and screwed into the hollow end of axle arm.

***I***—Is malleable iron cap screwing on end of box, preventing loss of axle nut or escape of lubricant and excluding all dirt or grit.

***G***—Is supply of grease filling hollow of arm. By removing cap *I*, insert key through "*j*" in the nut into socket in piston "*P*" and turning forward the grease is expelled through "*h*" and along groove in top of arm to the bearing. To use oil remove the piston "*P*" entirely, clean out all grease from the chamber and holes in *top and bottom*, put on the wheel screw in the nut and with ordinary oiler inject the oil through "*j*" in nut whence it will run to the bearing. In using oil the leather washers "*f* and *g*" should be thick enough to prevent end play but not bind. In using grease the washer or packing shown in the sand collar may be omitted or not, and washers "*f* and *g*" should be free enough to allow a little end play.

These axles are made right and left the same as others. The wheels are not, but the caps on front end of hubs are all threaded right hand. Otherwise all corresponding parts in each size are made interchangeable.

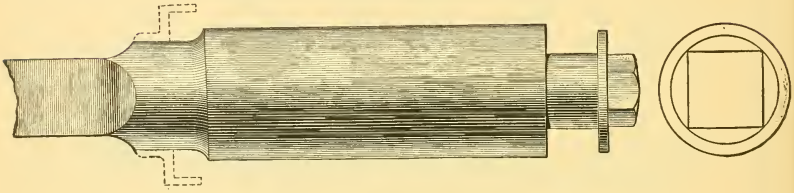
We prefer and advise but little dish in our wheels. Our spokes are driven quite firm and will not draw much in tiring, so do not "draught" the rim too much. Set the axle with very little if any front gather, as the arm is straight. Set the bottom of arms so as to give "plumb spoke" as in other wheels. Do not heat the axles near the collars—give the set in the center. When ready to grease screw out the piston *P*, carefully clean the same and the grease chamber to get all sand and grit out of the threads; also the collar, the hub and all parts. Now fill the chamber *full* of grease, screw in the piston 1 inch to 1¼ inch from the end, far enough to let the axle nut be screwed well home. Put on wheel, screw in the nut securely, insert the key through *j* and turn *forward* three or four revolutions, spinning the wheel at same time.

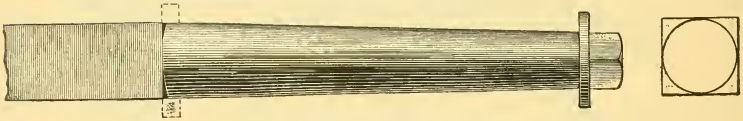
It is important to see that the foregoing instructions are complied with. Watch the running carefully the first few days or week, then turn out a little fresh grease upon the arm, after which every two to four weeks will be often enough to turn out more. Too much will show at the collar. A little care and experience will be your best guides in this.

Getting started off all right will be a great saving in the future and afford much satisfaction in all respects.

# American Axle and Wheel Company's Patent Axle and Wheel.

NEW STYLE.





OLD STYLE.

The cuts above accurately represent this axle in contrast with one of the ordinary style and of the same size of bed.

The relative size and strength is clearly and fairly shown. This axle *bed* is in all cases the same size and shape as in the common axle, but there all similarity ceases.

In the common style the *arm*, at the collar, where it usually breaks, contains only three-fourths of the metal (76 per cent.) which is in the square of the bed, and at this point it is relatively weaker because of being cut down at a right angle, from which form, the pounding of the wheel causes the metal to crystallize and break, while this axle, beginning some distance back from the arm or bearing, enlarges to a neck with a diameter equal to the cornerwise thickness of the bed, and this neck always and *necessarily* contains *double* the metal, and consequently *more than double the strength* of the common axle-arm, and being made without a square cut shoulder it will never crystallize or break.

# American Axle and Wheel Company's Patent Axle and Wheel.

## PRICE LIST.

N. B.—Only one "Grade" of Goods Made.

| List No. | AXLES. | | WHEELS. | | | Price per Set. |
|---|---|---|---|---|---|---|
| | Size of Bed. | Diam. of Arm. | Pattern No. of Hub. | No. Spokes in Hub. | Size of Spokes. | |
| 1 | $\frac{3}{4}$ | $1\frac{1}{4}$ | 10 | 14 | $\frac{3}{4}$ | $50.00 |
| | | | 19 | 16 | $\frac{3}{4}$ | 50.00 |
| 2 | $\frac{7}{8}$ | $1\frac{1}{2}$ | 20 | 14 | $\frac{7}{8}$ | 50.00 |
| | | | 29 | 16 | $\frac{7}{8}$ | 50.00 |
| 3 | 1 | $1\frac{3}{4}$ | 30 | 14 | 1 | 50.00 |
| | | | 39 | 16 | 1 | 50.00 |
| 4 | $1\frac{1}{8}$ | $1\frac{3}{4}$ | 40 | 14 | $1\frac{1}{8}$ | 50.00 |
| | | | 49 | 16 | $1\frac{1}{8}$ | 50.00 |
| 5 | $1\frac{1}{4}$ | $2\frac{1}{4}$ | 50 | 14 | $1\frac{1}{4}$ | 55.00 |
| | | | 59 | 16 | $1\frac{1}{4}$ | 55.00 |
| 6 | $1\frac{3}{8}$ | $2\frac{1}{4}$ | 60 | 14 | $1\frac{3}{8}$ | 60.00 |
| | | | 69 | 16 | $1\frac{3}{8}$ | 60.00 |
| 7 | $1\frac{1}{2}$ | $2\frac{1}{2}$ | 70 | 14 | $1\frac{1}{2}$ | 65.00 |
| | | | 79 | 16 | $1\frac{1}{2}$ | 65.00 |
| 8 | $1\frac{5}{8}$ | $2\frac{3}{4}$ | 80 | 14 | $1\frac{5}{8}$ | 70.00 |
| | | | 89 | 16 | $1\frac{5}{8}$ | 70.00 |
| 9 | $1\frac{3}{4}$ | 3 | 90 | 14 | $1\frac{3}{4}$ | 80.00 |
| | | | 99 | 16 | $1\frac{3}{4}$ | 80.00 |
| 10 | $1\frac{7}{8}$ | 3 | 100 | 14 | $1\frac{7}{8}$ | 90.00 |
| | | | 109 | 16 | $1\frac{7}{8}$ | 90.00 |
| 11 | 2 | $3\frac{1}{4}$ | 110 | 14 | 2 | 100.00 |
| | | | 119 | 16 | 2 | 100.00 |
| 12 | $2\frac{1}{4}$ | $3\frac{1}{2}$ | 120 | 14 | $2\frac{1}{4}$ | 110.00 |
| | | | 129 | 16 | $2\frac{1}{4}$ | 110.00 |
| 13 | $2\frac{1}{2}$ | $3\frac{3}{4}$ | 130 | 14 | $2\frac{1}{2}$ | 120.00 |
| | | | 139 | 16 | $2\frac{1}{2}$ | 120.00 |
| 14 | $2\frac{3}{4}$ | 4 | 140 | 14 | $2\frac{3}{4}$ | 135.00 |
| | | | 149 | 16 | $2\frac{3}{4}$ | 135.00 |
| 15 | 3 | $4\frac{1}{4}$ | 150 | 14 | 3 | 150.00 |
| | | | 159 | 16 | 3 | 150.00 |

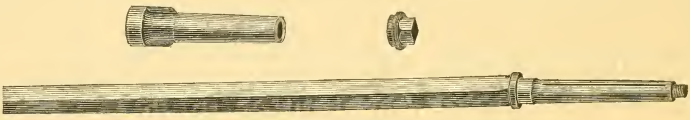
N. B.—No extra charge for Coach Bed Axles.

N. B.—No Banding, Boring or Boxing is required. Wheels are ready for use, except Tiring.

N. B.—No extra charge for Wrenches, Washers or Lubricator.

N. B.—For extra-height wheels, for extra-sized rims, and for screws or rivets in rims, the customary extra charge is made.

N. B.—Spokes for re-filling, finished ready to drive, may be ordered by "Pattern No. of Hub."



# Swelled Half Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Short Bed, . . . | $4.25 | 4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 |
| 28 | Long Bed, . . . | 5.25 | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | Swelled, Half Patent. | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| $15\frac{1}{2}$ | Short Bed, . . . | $4.25 | 4.50 | 5.00 | 6.00 | 7.75 | 10.00 | 12.75 | 16.25 |
| $8\frac{1}{2}$ | Long Bed, . . . | 5.25 | 5.75 | 6.50 | 8.00 | 10.25 | 13.00 | 16.25 | 20.25 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

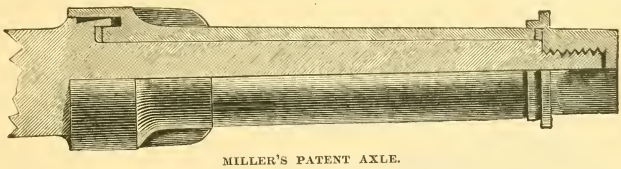
| No. | Swelled, Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Short Bed, . . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 8 | Long Bed, . . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12.
Coach Shape Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Second Quality Iron Solid Collar Axles.

| No. | Half Patent. | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 Plain, $13\frac{1}{2}$ Swelled, | Short Bed, . | $2.75 | 3.25 | 4.00 | 5.25 | 6.75 | 8.75 | 11.00 | 13.50 | 17.00 |
| 6 Plain, $6\frac{1}{2}$ Swelled, | Long Bed, . | 3.50 | 4.13 | 5.13 | 6.75 | 8.50 | 10.75 | 13.25 | 16.25 | 20.50 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12 additional.
Coach Beds, to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents per set additional.



MILLER'S PATENT AXLE.

## PRICES OF

# Miller's Patent Axle.

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

### Bessemer Steel Solid Collar Axles.

| No. | | $\frac{5}{8}$ & $\frac{3}{4}$ | $\frac{13}{16}$ & $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 41 | Short Bed, . . . | $4.50 | 4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 |
| 42 | Long Bed, . . . | 5.50 | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 |
| | Wrought Iron Case-Hardened Boxes, extra, | 1.60 | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Best Quality Steel Converted Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | $\frac{15}{16}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 43 | Short Bed, . . . | $4.50 | 4.75 | 5.25 | 6.25 | 8.00 | 10.25 | 13.00 | 16.50 |
| 44 | Long Bed, . . . | 5.50 | 6.00 | 6.75 | 8.25 | 10.50 | 13.25 | 16.50 | 20.50 |
| | Wrought Iron Case-Hardened Boxes extra, | 1.85 | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | | |

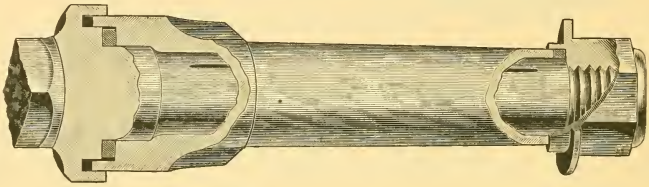
Coach Beds to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

### Medium Quality Iron Solid Collar Axles.

| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 | $2\frac{1}{4}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 45 | Short Bed, . | $3.13 | 3.75 | 4.50 | 5.75 | 7.25 | 9.25 | 11.75 | 15.00 | 19.00 |
| 46 | Long Bed, . | 3.88 | 4.63 | 5.63 | 7.25 | 9.50 | 12.25 | 15.50 | 19.50 | 24.00 |

Case-hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{5}{8}$ and larger, $1.12.
Coach Shape Beds, $\frac{3}{4}$ to $1\frac{1}{4}$, 30 cents; $1\frac{1}{4}$ and larger, 60 cents advance.

# Half Patent Collinge Collar Axles.



**Bessemer Steel Solid Collar.**

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 71 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 72 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

**Best Quality Steel Converted Iron Solid Collar.**

| No. | Inch. | $\frac{7}{8}$ & 1 | $1\frac{1}{16}$ & $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|
| 73 | Short Bed, . . . . . | $6.50 | 8.00 | 9.50 | 12.00 | 15.00 | 19.00 |
| 74 | Long Bed, Plain or Fan Tail, . | 7.50 | 9.00 | 10.75 | 13.50 | 16.50 | 20.50 |
| | Wrought Iron C.-H'd Boxes, Extra | 2.12 | 2.62 | 3.70 | 6.25 | 8.30 | |

Coach Beds to $1\frac{1}{4}''$, 30 cents; $1\frac{1}{4}''$ and larger, 60 cents advance.

# Steele's Patent Sand Box Axles.

(See cuts on page 24).

**SOLID FACED NUTS. PLAIN OR FAN TAIL BEDS.**

Coach Beds to $1\frac{1}{4}$ inch, 30 cents; $1\frac{1}{4}$ inch and larger, 60 cents per set, extra.

**Bessemer Steel.**

| No. | | $\frac{5}{8}$ to $\frac{3}{4}$ | $\frac{7}{8}$ | 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ |
|---|---|---|---|---|---|---|---|---|---|
| 3 | Short Beds, . . | $4.25 | 4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 |
| 3 | Long Beds, . . | 5.00 | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 |

**Best Quality Steel Converted Iron, Solid Collar.**

| No. | | $\frac{3}{4}$ to $\frac{7}{8}$ | 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ |
|---|---|---|---|---|---|---|---|---|---|
| 2 | Short Beds, . . | $4.50 | 4.75 | 5.25 | 6.38 | 8.50 | 11.00 | 14.00 | 17.00 |
| 2 | Long Beds, . . | 5.50 | 6.00 | 7.00 | 8.50 | 10.75 | 13.00 | 16.00 | 19.75 |

**Second Quality Iron, Solid Collar.**

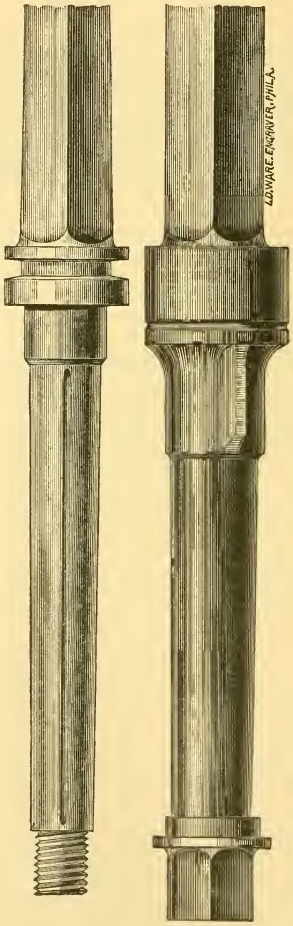
| No. | | $\frac{3}{4}$ to 1 | $1\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{3}{8}$ | $1\frac{1}{2}$ | $1\frac{5}{8}$ | $1\frac{3}{4}$ | 2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Short Beds, . . | $3.00 | 3.50 | 4.25 | 5.88 | 7.38 | 9.25 | 11.38 | 14.00 |
| 1 | Long Beds, . . | 3.75 | 4.38 | 5.50 | 7.25 | 9.00 | 11.13 | 13.50 | 17.00 |

Add to List Price for Case-Hardening, $\frac{3}{4}$ to $1\frac{3}{8}$, 60 cents; $1\frac{3}{8}$ and larger, $1.12; Steel Converting, $\frac{3}{4}$ to $1\frac{3}{8}$, $1.12; $1\frac{3}{8}$ and larger, $2.20.

---

**Common, Concord, Miller's Patent Oil Nut, Steele's Patent Oil Nut, Full and Half Collinge, Half Patent Collinge Collar, Killam Patent Spring Washer, Stiver's Long Swell Miller Patent and other styles of Axles furnished when desired.**

# Steele's Patent Sand Box Axles.



Webster Family Library of Veterinary Medicine
Cummings School of Veterinary Medicine at
Tufts University
200 Westboro Road
North Grafton, MA 01536

JOHN A. SEAVERNS